INTEROPERABILITY SUBCOMMITTEE MEETING

[Part 1 of 2]

Washington, D.C. - June 1, 2000

AFTERNOON SESSION

(1:04 p.m.)

MR. BUCHANAN: Okay, folks.

John Powell couldn't be here today, so I am acting chair for this meeting, and we are also, for anyone that's just came back in or wasn't here in the morning, we will be doing some work from the technical subcommittee here this afternoon also, so it won't be all interoperability. We are going to tie in the Work Group 6, wideband standards in with the technology. Also, we have some leftover business on software defined radio that we need to present.

And I don't see Glen here, but Art, you have that?

MR. MCDOLE: I haven't seen --

MR. BUCHANAN: All right. Well, the rest of it is going to be at the end so we will just do that at the end also here.

THE AUDIENCE: He'll be here in a couple of minutes. He's talking outside.

MR. BUCHANAN: Okay. Well, we'll be okay. We'll do those two items at the end of this.

What I want to do is the work group -- if you have the agenda, what I would like to change on it is move number eight up and make is seven, and then do all the work group, leaving the (e), the Work Group 6, to the very end, and then we can discuss both the user needs and the technology issues together, and at the same time we can also open it up for the software defined radio, a little write-up that's got going here.

So I guess the first thing is, Michael, if you have any more announcements?

MR. WILHELM: I will just repeat what I said this morning for those who weren't here, and that is that the September meeting, September 14-15 meeting, will not be in this building. It will be in the Commerce Department Auditorium on 14th and Constitution, and we will have maps on the web site. And that's about all.

MR. BUCHANAN: Okay. And I got the dates out of that too because I didn't have them from the last meeting.

Do we have -- we don't have another membership roster, do we?

MR. SCHLIEMAN: Well, I have something that comes a little bit closer to it perhaps.

Michael, in the change that has taken place in the subcommittee meetings, we don't have a roster anymore; is that correct?

MR. WILHELM: We don't have a sign-in process.

MR. SCHLIEMAN: Right.

MR. WILHELM: That's right.

MR. SCHLIEMAN: So as far as the interoperability working groups are concerned, I just take the material that Tim has on the list servers for those to figure out who is on what? Okay.

I guess, as far as the topic of membership roster then, since we don't maintain a roster anymore, I would just comment that we have interoperability working groups that are involved in individual list servers. Work Group 1 is report drafting. Work Group 2 is operational. Work Group 3 is rules and policy, spectrum planning. Work Group 4 is liaison with outside groups. Work Group 5 is trunking. And Work Group 6 is data interoperability.

And if anyone is interested in participating in those activities and has not signed up for being on the respective list servers, I encourage to do so.

MR. BUCHANAN: Okay, and then the next item is the adoption of the agenda, and with the changes I outlined, I'll consider it adopted unless someone jumps up to the microphone real quick and objects to something.

(No response.)

MR. BUCHANAN: Okay, I don't see anybody doing that so we will go ahead with this agenda.

Bob, can you review the minutes from San Francisco and we'll approve them? I don't know how much we need to read them.

MR. SCHLIEMAN: All that stuff was put out on the list server.

MR. BUCHANAN: It's also back --

MR. SCHLIEMAN: Back there?

MR. BUCHANAN: -- on the table too. I've got a copy here, or maybe it isn't on the table.

MR. SCHLIEMAN: The document number is IO-0045A - 2000-0407. It's four pages.

Has everybody had an opportunity to review these minutes off of the e-mail?

MR. MCDOLE: Bob, your usual excellent job.

I noticed that either inadvertently or on purpose you have omitted Working Group 5. Did we have a report from them at the meeting?

MR. BUCHANAN: That's the trunking working group?

MR. MCDOLE: Yeah.

MR. BUCHANAN: No, it's basically five is wrapped up, and so I'm chairing six, which we had to make to --

MR. MCDOLE: So it's left of the list intentionally then?

MR. BUCHANAN: Yeah.

MR. SCHLIEMAN: If you are referring to the work group reports, yes.

MR. MCDOLE: That's right.

MR. SCHLIEMAN: Because the work group has completed and there are reports.

MR. MCDOLE: I thought maybe there would be a statement, "No report" or "Work completed" or something.

MR. SCHLIEMAN: No.

MR. MCDOLE: Just so it's not an omission. I don't have any problem with it, it's fine.

MR. SCHLIEMAN: In fact, as a result of his completing that work in such excellent fashion, he was given a new work group.

MR. WELLS: I notice there is a difference between the minutes and what's referenced in the agenda. The agenda says minutes from San Francisco, but the minutes are from the meeting in Washington, D.C.

MR. MCDOLE: Right.

MR. BUCHANAN: That's a mistake.

MR. WELLS: It should read Washington, D.C.?

MR. BUCHANAN: Yeah, that's a mistake. John, I'm sure he meant Washington, D.C. because the San Francisco meeting was a long time ago now. So we will correct that on here.

MR. WELLS: And I'd like to ask for a clarification in the minutes where it -- it's on the first page at the bottom for Work Group 4.

Could you read that and make corrections as you go across the wording?

MR. SCHLIEMAN: Work Group 4 liaison without outside groups. Chairman Don Pfohl reported an ongoing, it's supposed to say --

MR. WELLS: An ongoing?

MR. SCHLIEMAN: -- effort to scrub the status of regional planning committee conveners for the 700 megahertz band. Corrected as noted.

MR. WELLS: Okay.,

MR. BUCHANAN: Okay. Any other corrections to the minutes?

(No response.)

MR. BUCHANAN: Okay, hearing none I'll consider it adopted with the corrections, or accepted, I guess.

Document update then. I don't know how Bob's name got on here in so many places, but I do thank him. It makes it a lot easier for me.

MR. SCHLIEMAN: I just got a mailing from John Powell that he initially sent at 1:47. I just got it now while you guys were having lunch. And so I will read from that document, which I haven't printed out yet.

The latest document list is IO-0000G-20000531. That's the latest document list. He has also attached the following files for the June 1 interoperability meeting. In addition to that one there is the revised second year work plan, IO-0042B-20000530; a letter from Craig Jorgensen of Project 25 regarding the wideband standards, IO-0043B-20000331; a letter from FEMA regarding definitions, IO-0046A-20000410; four versions of the interoperability Work Group 6, wideband data user needs document, and those are IO-0048A, B, C and D with dates ranging from 2000424 through 20000510; standards for 700 megahertz wideband channels, IO-0049A-20000424; the IACP communications and technology committee position on ICS, I guess that's integrated communication system?

MR. BUCHANAN: No, incident command system.

MR. SCHLIEMAN: Incident command system, I'm sorry. IO-0050A-20000506; and a revised 6-1 agenda which we just corrected.

These things were all sent out on the list server. Some of these documents are in the back.

MR. BUCHANAN: I might note also the technology issues is really not an interoperability document. It's a technology subcommittee document, the technology issues on high speed wideband data, so I think he got a little carried away.

MR. BEEFERMAN: Point of information?

MR. BUCHANAN: Yes.

MR. BEEFERMAN: Looking through that list from John, I noticed he has on it, but it's not circulated here, a document that I had sent you regarding parallel decode technology, and I noticed that document was included among these others in the server. It was marked up.

I just wanted to make sure that -- well, if it's been marked up and there is some questions, I think we would like to respond to the questions and make sure that's included in the next distribution of material.

Were you aware that it was in there?

MR. BUCHANAN: No, I wasn't aware. I didn't see it in --

MR. BEEFERMAN: I received an e-mail.

MR. BUCHANAN: I know which one you're talking about.

MR. BEEFERMAN: Right.

MR. BUCHANAN: And you sent me on parallel decoder.

MR. BEEFERMAN: Correct.

MR. BUCHANAN: But I considered it just a background document.

MR. BEEFERMAN: Oh, sure. Sure.

MR. BUCHANAN: Which I'm sure that's what it was.

MR. BEEFERMAN: Well, it was distributed on the list server as a marked up document under the heading of "wideband interoperability". I don't know what the intention there was, and certainly it's information so, you know, it's not a problem of being distributed, but it was distributed in a marked up form.

So if in fact it was, I'd like to make sure that the author can respond to the markings on the document and further, you know, answer any questions that exist.

MR. BUCHANAN: Did you not see John's e-mail this morning?

MR. BEEFERMAN: No.

MR. BUCHANAN: Okay.

MR. BEEFERMAN: Well, he sent it out this morning and I don't have access to the web here.

MR. BUCHANAN: As most people do.

VOICE: I saw it at 7:00 this morning, so it probably -- he had a problem with his computer apparently.

MR. SCHLIEMAN: I went to bed 20 minutes before he sent it, so I didn't get it until noontime.

MR. BEEFERMAN: Sure. Sure.

MR. SCHLIEMAN: As a result of his phone call.

MR. BEEFERMAN: It's under that list of documents that you just referenced a few minutes ago.

MR. BUCHANAN: I'll tell you what, I haven't seen that so maybe we can bring it up. If it becomes an issue in our discussions, then we will --

MR. BEEFERMAN: Well, I was going to reference it in and certainly we can talk about that later.

MR. BUCHANAN: Okay. I think it's -- you know, it's just more backgrounds for the discussion, so we can bring it up then.

MR. BEEFERMAN: I have no problem with that, you know.

MR. BUCHANAN: Okay.

MR. BEEFERMAN: Just wider the circulation the better.

MR. BUCHANAN: Yeah.

MR. BEEFERMAN: But it was distributed as a marked up document and nobody inquired as to any of the questions that I know of about the markings on that document, so we would just like to have a chance to respond to whatever documents circulated with comments might imply.

MR. BUCHANAN: Okay.

MR. SCHLIEMAN: Is that the --

MR. BUCHANAN: I have no idea what they are.

MR. SCHLIEMAN: For purposes of clarification, that's IO-0048C, dated 20000504.

MR. BUCHANAN: Data Radio New Tech Helps Solve -- I think that must be the one.

THE AUDIENCE: I don't recall the exact title.

MR. BUCHANAN: Well, can you pull it?

MR. SCHLIEMAN: Yeah, I'll pull it out.

MR. BUCHANAN: Hang on, we're just going to open it up to see if that's the one, so we see if we've got it here.

MR. SCHLIEMAN: Yes, it is -- it's got edit marks on.

MR. BUCHANAN: Oh, wait a minute.

MR. SCHLIEMAN: He's put editorial comments.

MR. BUCHANAN: No. Add charter diagram and that, is that what you are talking about?

MR. BEEFERMAN: Yes, there is a --

VOICE: Speak into the microphone, please.

MR. BUCHANAN: That came -- Steve, when I got that document, those were on it. That wasn't something we added.

MR. BEEFERMAN: Oh, really?

MR. BUCHANAN: Yeah.

MR. BEEFERMAN: Oh, okay.

MR. BUCHANAN: I think that must have been --

MR. BEEFERMAN: An internal?

MR. BUCHANAN: Yeah, internal to you.

MR. BEEFERMAN: I'll look at it again, but I recall that I thought I had sent an unmarked copy. It could be our --

MR. BUCHANAN: No. In fact, I can bring that -- I have that from your e-mail in my computer.

MR. BEEFERMAN: Oh, okay.

MR. BUCHANAN: But I remember those because I kept wondering why they were there. Well, I figured they were just something internal --

MR. BEEFERMAN: Right.

MR. BUCHANAN: -- when you guys were making up the article or whatnot.

MR. BEEFERMAN: As it turns out, the document is going to be published, I think, next month at Radio Resource.

MR. BUCHANAN: Okay.

MR. BEEFERMAN: So if in fact that's a copy with further markings to improve the content for publication, that's fine.

MR. BUCHANAN: That's what it looked like to me because it was like, you know, add a chart here or add something there

MR. BEEFERMAN: I just clicked on the document from our internal file. So if it turned out that way, I apologize for the inference, but just want to make sure that was the case.

MR. BUCHANAN: Yeah. No, nobody -- okay, nobody marked it up then. It's just what came from you guys.

MR. BEEFERMAN: Okay.

MR. BUCHANAN: Okay, I guess that's all on the document update?

MR. SCHLIEMAN: That's all I have.

MR. BUCHANAN: Okay.

MR. SCHLIEMAN: Unless you want to read each and everyone of them.

MR. BUCHANAN: No, I do not want to do that. We'll be here forever.

Number 6 --

MR. SCHLIEMAN: I already did that, essentially No. 2.

MR. BUCHANAN: Right. If there is anyone out here in this meeting that would like to sign up on any of the working groups, just come and see us up here after the meeting, and we have the roster and we can get you added on.

Okay, and I guess you're back up on -- is there anything on report drafting right now?

MR. SCHLIEMAN: Yeah, I -- on the back table there is a draft of some of the things that are in development here to put this together, and basically this report will be a compilation of all of the material that we have received through the process. I shouldn't say all of the material.

It will be a compilation of all of the actions that were done, task key findings and recommendations, and provide basis for why we did it in terms of the tasking and the committee assignments, and there is some more stuff that I am getting people together on.

You might notice on interoperability working groups, the tail end of that there is that chart we were talking about with the task group assignments, working group assignments.

MR. BUCHANAN: Will you also report now on what is number eight that I moved to number seven, the draft milestones and plan of action because I want to get out of the way right now?

MR. SCHLIEMAN: Oh, that's the one that just came through? Let me find it.

(Pause.)

MR. SCHLIEMAN: No, I don't have 42B. That's probably the one, Michael, that you were referring to earlier?

MR. WILHELM: Yeah, it's in this.

MR. BUCHANAN: Oh, okay, it's in this.

MR. SCHLIEMAN: What does the front of it look like?

MR. BUCHANAN: Year-end report.

MR. SCHLIEMAN: Oh, that's not the second year report, is it? That's the first --

MR. BUCHANAN: Well, it's got the Statement of Work, I guess.

MR. SCHLIEMAN: Okay. This was a draft form. Is this the final form? I'm not sure. That was the question.

MR. WILHELM: Well, it's what we received this morning. It's dated March 27th.

MR. SCHLIEMAN: That's mine. I did that. That was a draft document, I thought, at the time.

MR. BUCHANAN: Okay. Well, I guess we can consider it and see if there is any changes, and then we can adopt it.

MR. WILHELM: Should note that the meeting dates listed as tentative have been kind of taken over by events. There will be no August 4th meeting, it's the September 14th and 15th. And the October 6th meeting hasn't -- is unlikely to occur on that date. We will have to set it this afternoon, or tomorrow afternoon. Same thing with the November 23rd and 24th meeting.

MR. BUCHANAN: Okay. Has everyone found it? It's in this document, interoperability report draft outline, and it starts -- the heading is at the very bottom of the third page, and basically the first two items, August 3, 2000 and August 4, 2000, are really, I guess, going to happen at the September 22nd meeting because that will be the next meeting.

MR. SCHLIEMAN: This list, by the way, predated the last meeting.

MR. BUCHANAN: Yeah, and I -- the other change that would -- we're going to take up the wideband data report today and hopefully have that forwarded and get that moving or see if we can get it moving. That's under August 4th.

What do you want to do?

MR. SCHLIEMAN: Well, this is not the referenced document by that number, so I don't know what to say. This is merely draft. There is a memory jogger for me to put in the report.

MR. BUCHANAN: So we really --

MR. SCHLIEMAN: I don't know if this is totally accurate with respect to the outcome of the April meeting.

MR. BUCHANAN: Okay, I think what we will do with this issue then since John is not here and we're not sure where the draft is, is I'll get back to John and make sure that on the list server for the full subcommittee that we send out the work plan document so everyone can review it. And then if you have any specific concerns, you can get back to John on it because this draft has been pretty much overtaken by time, so it needs extensive revision, and we'll just mush on with what we are doing here today.

Is that okay with everyone?

MR. WILHELM: Dave, you mentioned a September 22nd meeting. In fact, it's the 14th and 15th.

MR. BUCHANAN: Fourteenth, yeah. Okay, I was reading. Sorry, I was reading off of this document and it is the 14th - 15th. So all of this is -- it needs to be revised again, and we don't seem to have the -- there may be a revised document, but we don't seem to have it.

MR. SCHLIEMAN: I might make an observation, although I think I sent it out on the e-mail to everybody, that with these computer viruses that have been occurring systems have been shutting down to try to contain that, and as a result mail has been rejected, and phone calls have been made. So that's how I know that mail has been rejected. And there may be instances where e-mail has not gotten through.

In any case, I don't have the document number that is referenced on number eight.

MR. BUCHANAN: Okay, we will just continue on then.

Work Group 2, operational requirements, use of the ICS system.

MR. MURPHY; Kyle sends his regrets for not being able to make the meeting, but --

MR. BUCHANAN: Rick, could you identify yourself, please?

MR. MURPHY: All regrets for Kyle, you mean?

Kyle Sinclair. Rick Murphy. Kyle sends his regrets, so we do have -- Working Group 2 did manage to put together a draft on the ICS which we got a copy from the National Interagency Fire Center in Boise, and reviewed that and we're critical

about it, whether or not it would be applicable to the channel prioritization of 700 megahertz.

So the incident command system that they use, it turns out to be a good system. There are some shortfalls in it for the application 700 megahertz. But in light of the fact that John Powell has sent on now the IECP ICS, we would like to defer at least for 30 days releasing the document to the whole group for review so that we can do both of them on the same document, both the IECP and the NIFCE document. That way you will have one concise report from two different ICS's, and then considerations and recommendations on what to do, and we should be able to do that within 30 days and send it out on the list server review by the interoperability subcommittee.

So I guess we're asking for a 30-day continuance to final it, to include the new documents put out by Chairman Powell.

MR. BUCHANAN: Okay. So then that would mean we would bring it back up at the September meeting for consideration.

MR. MURPHY: Correct. Well, the reason why we would like to get it done in 30 days is to allow a lot of time for review and comments because we feel that there are issues to be addressed in here which obviously are pertinent to prioritization that will fall within the scope, according to the February 25th report, they will fall into the scope of the SIECs if they are deemed indeed that they need to be formed, so there are some responsibilities that they have to tack onto that particular group, we feel, in order to make use of a good viable ICS.

MR. BUCHANAN: Okay, that sounds good.

Is there any problem with that or any other comments on the ICS?

(No response.)

MR. BUCHANAN: Okay hearing none then we will defer that. The report will be out in 30 days on the list server and then we will bring it back up at the September meeting.

MR. MURPHY: Thank you.

MR. BUCHANAN: Okay, Carlton, Work Group 3, rules, policy and spectrum?

MR. WELLS: Yes. What came up this morning was the discussion on an alternate band plan, and I mentioned that I would do the renumbering or relabeling of those channels from the band plan that was accepted.

I would like to throw out a caveat though, that this band plan is still subject to the FCC action, and I believe they are going through ex-parte. And while the FCC may be considering a band plant, we discussed a different band plan.

And so what I have labeled here may or may not be the band plan that actually comes to fruition, and it could result in a relabeling again. But anyway, here's my stab at it.

Going with the alternate band plan that was accepted by consensus this morning, if you will pull out those or pull out that picture of it, the black and white handout, I'll start with the channel number and then you can go vertically down, just to reiterate what we touched on this morning or agreed on this morning.

Starting with channel 14 and 15, and going vertically down to channel 334 and 335. Those channels, I'm going to -- and then I'm going to the table of interoperability channels first with specific uses and services. I'm going to start in the

second group that begins with the calling channel 7A. Let that be the channel 14 and 15 instead of channel 59 and 60.

And then working vertically down ETAC 15, FTAC 17, LTAC 19, and then the low speed data channel DTAC 21A/B.

I used a little single letter identifiers for each of those: (c) for calling, (e), (f), (l) and (d) for their associated TAC labels.

MR. SCHLIEMAN: Would you read those labels again from calling channels?

MR. WELLS: Calling? 7A, ETAC 15, FTAC 17, LTAC 19, DTAC 21A/B.

Are you ready?

MR. SCHLIEMAN: Yeah, I guess.

MR. WELLS: Okay. I'm going to skip the next three channels there, or channel sets, and go to the other group of five channel sets starting with channel 54 and 55 all the way down to channel set 374/375.

Let that represent the general public safety services channels that operate secondary trunk, and they are called GTAC 5, 7, 9, 11, and 13.

Is that a little easier, Bob?

MR. SCHLIEMAN: Sort of.

MR. WELLS: Okay. Okay, now let's bounce back to the first group of three pairs or three sets beginning with channel 22 and 23 on down to channel 182 and 183.

This is going to bounce around a little bit in the table of interoperability channels.

Channels 22 and 23, let that represent MTAC 23, that's the mobile repeater, that can be station class FB-2 or MO-3. Channel 103 and 104 -- I'm sorry -- 102 and 103, let that represent GTAC 31. Channel 182 and 183, let that represent OTAC 33, OTAC representing other public services.

MR. SCHLIEMAN: Repeat that last one.

MR. WELLS: 182 and 183 representing OTAC 33.

MR. SCHLIEMAN: Mm-hmm.

MR. WELLS: And going over to the last group of three sets, channel 62 and 63, let that represent ETAC 25; channel 142 and 143, let that represent FTAC 27; 222 and 223 represent LTAC 29.

The reason behind this, if there is any questions of why I jumped around and why I may have jumped around within the table to associate certain ones to the groups of three each, if you look at the alternate band plan, you will see the first group of five representing conventional only channels. That would conceivably let you put them at the same site as the other group of five if you trunk those together and recognizing that those are secondary trunk use.

Then the mobile repeater, given it can go anywhere in your area of operation and not necessarily at the site where the other channels are at doesn't necessary have to be 250 kilohertz away, and giving some degree of potential use for the other three channels if you wanted to specifically, a specific TAC channel, a second specific TAC

channel for ETAC, FTAC and LTAC, that would let you do that because that's more than 250 kilohertz away from the first group of five that include the ETAC, FTAC and LTAC.

So there was a little method to the madness here, and I'm certainly open to suggestions because this is my first stab at it. If there is some definite problems to it or ways to improve upon it with other reasoning, I'm all ears.

MR. BUCHANAN: I have one quick question. Actually, it doesn't change anything of what you. But we didn't -- even though we specifically did the MTAC, we didn't preclude having any temporary locations on the other ones did we? I'm just trying to remember.

MR. WELLS: No. On the general public safety services, those could be temporary, like mobile command post or mobile repeater sites.

MR. BUCHANAN: Yeah, temporary, any temporary location, yeah.

MR. WELLS: And that's spelled up on the write up.

MR. BUCHANAN: Yeah.

MR. WELLS: But it's specifically to those first five general public safety services that are secondary trunked also.

MR. BUCHANAN: Okay. Does anyone have any comments, any problems with it or any suggestions for improvements?

MR. WELLS: Let me add too that it duplicates itself on the other band of narrow band.

MR. BUCHANAN: Right. I don't see any -- no one has commented. Amazing.

Do I take that to be consensus to go with this? We can wrap this up and make that part of the report recommending this band plan?

MR. WELLS: Before we consider this lack of people speaking up or the silence as consensus, let me also add that due to the renumbering and the reshuffling of these channels I see some fine tuning, some fine tune changes going on to the other documents, IO-0036, administrative oversight; IO-0018, channel designation and priorities; and IO-0023, trunking on voice interoperability channels. There will be some changes in there to fine tune it so it reflects the correct channel numbering scheme now and the slight differences in how it's laid out for labeling.

MR. BUCHANAN: Okay. Well, in that case --

MR. SCHLIEMAN: Those are just harmonizing.

MR. BUCHANAN: Yeah. Assuming that we have consensus on this relabeling of the proposed new band plan, does anyone have an objection to us just allowing John and Carlton to make the editorial changes that need to be done to those documents as long as they don't change any substance, they're just going to change and update the documents to reflect these changes? Is there a problem with that?

MR. WELLS: With the caveat that is still subject to the FCC decision on it.

MR. BUCHANAN: Right, everything is subject to the FCC final decision, of course.

MR. BUCHANAN: Okay, I don't -- yeah, go ahead, Norm.

MR. COLTRI: Do I have to go to the mike?

MR. BUCHANAN: Yes.

MR. COLTRI: Norm Coltri, RCC Consultants.

I don't have a problem with the band plan as laid out for the changes. However, I do request that a color copy be made available on the list serve or by some other means if you have it available today. It's very difficult to follow the black and white copy, and something may show up when we see it actually in color. So I would like to have that made available as soon as the changes are made to the plan

MR. BUCHANAN: Okay, that's a reasonable request and we will work on that. Maybe -- I don't know, maybe we can get it updated by tomorrow.

MR. WELLS: What I can do, Dave, is make the changes to the three documents, also one of them will include the table of interoperability channels, and at the same time include a file of the alternate band plan so there will be four files distributed on the list serve for the fine tune changes that are going on. Then everybody will see it in living color.

MR. COLTRI: If it's available tomorrow, that would be fine too.

MR. WELLS: Oh, tomorrow is a different story for me. Whosever color copy, I think we're limited to those right now.

MR. COLTRI: A spreadsheet, electronic copies.

MR. SCHLIEMAN: No, we can get it on the list serve.

MR. BUCHANAN: Okay. From Ron Harris, I think he put it on the list server.

MR. SCHLIEMAN: Yeah.

MR. BUCHANAN: Yeah, okay, I think we can do that. Bob and Carlton will work on it. Huh?

MR. WILHELM: I could probably produce it on a mad night session.

MR. BUCHANAN: Okay, we may even have -- be able to run off some color copies too for tomorrow then, if that would help.

MR. MCDOLE: My question regarding --

MR. BUCHANAN: Yeah, go ahead.

MR. MCDOLE: -- editorial. I didn't hear it specifically discussed in the relabeling.

When we refer to the adjacent channels by both "reserve" and by the name "guard" in our discussions today. What is the final version of those adjacent channels? How will they be labeled and will they be colored differently than the other in the color version?

MR. BUCHANAN: Probably guard channels and it would be a good idea, if you can, to make them a different color so that --

MR. WELLS: Well, the reserve channels should show up in pink.

MR. BUCHANAN: Yeah, but the guard, the ones on either side of the -- like 13 and 16.

MR. WELLS: Those will be pink because they are still reserve channels. They act as guard on each side but they are still technically called reserve channels.

MR. BUCHANAN: Okay.

MR. SCHLIEMAN: And our recommendation earlier was that that be subject to regional plan.

MR. MCDOLE: Yeah.

MR. BUCHANAN: And we will have to put that -- actually that would be part of the technical subcommittee's write up.

MR. MCDOLE: Well, it was editorial only, but the color solution will help identify those channels.

MR. BUCHANAN: Yeah.

MR. MCDOLE: Thank you.

MR. BUCHANAN: Okay.

MR. WELLS: Okay. So I will write those up?

MR. BUCHANAN: Yeah, it looks like -- I don't see any -- nobody stood up and objected to anything, so I'm going to consider that consensus.

MR. SCHLIEMAN: Editorial, yeah.

MR. BUCHANAN: And you can do the editorial and make the changes, and if possible, we will have them on the list serve and also try to get some color copies of it for tomorrow so you can take a look at it.

MR. WELLS: I've got a couple more items here also.

MR. BUCHANAN: Okay, go ahead.

MR. WELLS: As we have gotten into the wideband discussions, it came to my attention that most, if not all, of last year dwelled primarily on voice operation, very little and possibly at most in data was the low speed data and arriving at the two DTAC channels in the narrow band spectrum.

Now that we are getting into wideband to do, quote "to do" that I have put upon myself is to review the current policies for accuracy to wideband applications; that while all the interoperability channels, all of them are interoperability channels, be it

narrow band or wideband, peculiarities may arise which are specific to the narrow band or wideband, and maybe not to both.

So again, those same documents I referenced before, IO-0036, 18 and 23 specifically, from the rules and policies work group, I will look at those and put out on the list serve the seed for discussion related to wideband operation that may not be identified in narrow band. While some of it's generic, others may have to be specifically stated.

For instance, in the document labeled 0018, whichever alphabet we are into now, D or B or F or something, it specifically says, "Channel designation and priorities for voice interoperability channels." And also for document 23, "Trunking on voice interoperability channels." But yet we have already put two DTAC channels in that narrow band spectrum. And if all we have been talking about is wideband data, or data on the wideband spectrum, then these two policies, at least in the title, sidetrack you from any data carryover that those may have in them, so I'm planning on giving those a review to see how they may carryover or we need different policies in wideband.

Even the document IO-0037, user needs, statement of requirements for low speed data standards on interoperability channels, that one may come up also. That one, I believe, is a data-specific document.

Dave, I believe you wrote it.

MR. BUCHANAN: Right. But I have one for -- our discussion today is going to be on the wideband user needs.

MR. WELLS: Okay. And just like last year, after about a couple meetings is when the rules and policies work group really took off and starting putting

some documents out there as a seed for everybody to launch from, and we're about at the same time line now. We're into our second our third meeting now, and I'm feeling energetic again with the information gathered already.

The third item, and this discussion came up at lunchtime, had to do with the state interoperability executive committee. This was introduced back in San Francisco, and I believe there wasn't any discussion on the list serve leading up to the San Francisco meeting. It was introduced in San Francisco based on that recollection, and accepted by consensus and it resulted in inclusion into the February Twin Thrift report.

But there was some discussion over lunch that this might add an administrative layer to the planning activities. And in reading the document 36 -- IO-00036E that's in the report, February 25th report, I want to at least mention that this was to cover states that had multiple regions, that have multiple states to administer the plan uniformly across the state. Otherwise, it might be difficult in some of those cases.

And it ends with, "Unless a state refuses to take such responsibility, the regional planning committees must act."

So I believe the way this reads, even though the recommendation number one says, "It shall be formed to administer the state interoperability plan," the discussion that is in this document, it gives the understanding that if the state refuses to take that responsibility, it falls back to the region planning committees anyway.

So those states that don't want to have it end up being just an RPC. Those states that want to have it take on that additional responsibility to form a state interoperability executive committee, and the way this reads it's not a function of the region planning committees; it's the states themselves.

However, I would also like to add that the region planning committees are the ones who are authorized by the FCC rulemaking and that the state interoperability executive committees may merely be guidance or direction for the regional planning committees to act on or not act on.

So, again, it may be do nothing more but add an administrative layer to the planning activity.

MR. BUCHANAN: Are you suggesting we need to revise that then?

MR. WELLS: No, just stating a clarification so that if there is a recommendation in the audience today to revise that, I wanted to just clear up, after I've had a chance to read this after lunch, that they are not absolutely required that it falls back to the regional planning committees if one isn't form.

So say California wants to form a interoperability executive committee and they are the only state that forms it, then California can form it. They are not going against the grain. And the other states who elect not to form it, it's merely an RPC activity, not another layer on top of the RPC activity.

MR. MCDOLE: If I might comment on that. I hate to talk to talk so much, but I wrote that in the first place as a compromise after the discussion up there, and I know the intent is exactly as Carlton stated, and I'm not sure the wording came out correctly right.

It was not to be a mandate that a state had to form such a committee, and it was not the intent to create another layer. It was someone to manage the thing, such as we do in California, over and above the regional planning committee if they so chose to management that, not to pick the frequencies or anything like that. It was simply -- in

California, as you know, the state licenses, those other than the national channels, and I want to make certain that it's not taken as a mandate; that the regional planning committees can indeed and do have the final authority on the whole package, but that it is permissive for the states to have this adjunct to govern the plan to a more finite degree than would be done by the planning committees.

Is that everybody's understanding, however it's written, Carlton?

MR. BUCHANAN: That was my understanding. I would think we are okay even though -- I mean, the discussion clearly says that in the document.

MR. WELLS: Yeah, the recommendation comes across pretty hard. It's a "shall". But the discussion says, "In the event there is," and I'll just kind of paraphrase or just synopsize it, in the event that there is no state interoperability executive committee, the region planning committee must act.

MR. MCDOLE: Right.

MR. BUCHANAN: Wouldn't we be better off just changing the one word to "should" instead of "shall"?

MR. WELLS: That would often recommendation one, by removing the "shalls" and putting in "should".

MR. MCDOLE: Should, yeah. "Should" instead of "shall".

MR. BUCHANAN: Obviously, we can't mandate the states to do any of that. It's going to have to be voluntarily done, and "should" would imply that.

MR. MCDOLE: If we need any -- just put it out for consensus and get that reworded or?

MR. BUCHANAN: Yeah, we -- I'll put it out for consensus right now. I think we've got one more comment there.

MR. SORLEY: I understand the intent. However, reading --

MR. WILHELM: Identify yourself.

MR. BUCHANAN: We need you to --

MR. SORLEY: I'm Tom Sorley, and I'm representing the Florida Chapter of APCO.

Reading in this book, it says that the interoperability subcommittee shall enter into a binding memorandum of understanding with each user of interoperability channels with the SIEC's jurisdiction.

In other words, it's -- the way I'm reading this, this binding MOU is something that is mandatory. That's what you're recommending.

MR. BUCHANAN: That is. That's separate from the other issue of who forms the group.

MR. SORLEY: Okay.

MR. BUCHANAN: Once the group has been formed for you to use what we came up with is before you would be able as an agency to use the interoperability channels, you would have to enter into the memorandum of understanding on all the rules.

MR. SORLEY: But who would the memorandum of understanding be with if there was no --

MR. BUCHANAN: It would be with either the --

MR. SORLEY: -- interoperability executive committee.

MR. BUCHANAN: Either with -- if the state forms the interoperability IEC, and executive committee, then it would be with that state executive committee. If the state declines, then it would be the regional planning group for the state, the regional planning committee for whatever state you are in.

MR. SORLEY: Okay.

MR. SCHLIEMAN: For the area.

MR. BUCHANAN: Yeah, the area. Yeah, that's true.

MR. SORLEY: In that respect, I'm comfortable with it then. It really -- I got the impression that these were something that was mandated as a result of that one statement, so thank you.

MR. BUCHANAN: No, they are not. It is mandated, you should understand it is mandated from the standpoint if you want to use the inoperability channels, then you're going to have to enter into this agreement so that you clearly know the rules and that you will follow the rules, and that was a very big discussion we had over several meetings actually, and there was a lot of consensus that it shouldn't be something where people thought that once they got used to these channels they owned the channels; that they had to clearly know that these were for interoperability.

MR. SORLEY: Thank you.

MR. KEARNS: Kevin Kearns with the Washington Chapter in Region 43.

I guess just in my view changing it just to "should" isn't enough because there is still a presumption in the language that it's the state has the default responsibility to do it, and if they don't choose to do it, that it falls to the regional planning committee.

And I think that really if the intent was it can be one or the other and it needs to be mutually decided in each state, then it should be written to make sure that that's clear it doesn't appear that it's a default as a state mandate even if it doesn't mandate it at the state level.

MR. BUCHANAN: Well, actually, our intent was that if at all possible it would be done by the state rather than the regional planning, but we obviously can't mandate that for the states so we had to have a fallback if the states didn't want to take it on.

MR. SCHLIEMAN: And the reason for that, I believe, relates to licensing. The regional planning committee doesn't hold the licenses but the state could, as in the case of California, hold the license for the eight channels -- sorry -- the interoperability channels, and therefore exercise control, and the whole reason is to exercise control so that people play like they are supposed to.

MR. KEARNS: But licenses could be invoked by some entities other than states, like counties, and work with regional planning committees to implement interoperability repeaters in a way that didn't require one or more state agencies to come up with some administrative structure to try to put together a committee.

MR. BUCHANAN: Yeah, exactly.

MR. KEARNS: From our perspective, it would be better if it was open for negotiation between the state and the regional planning committee to come up with an approach that works appropriately and not default to the state.

MR. BUCHANAN: Actually, I think the way we wrote it, that's what would happen. If the state or if your region doesn't want to do it through the state, then

you're, you know, fine to put it together through the regional planning group, in that direction. I don't think we have in any way stopped that from happening.

MR. SCHLIEMAN: Was your concern that the state should not have the opportunity to take on the responsibility as a first offer, or that the regional planning committee shouldn't take it on as a first offer?

MR. KEARNS: Kevin Kearns again.

My concern is just that it not -- it seems like we are saying if it can be done either way and they each have value and merit and appropriate application given the situations that any individual state or region are in, then why don't we just say that?

If it implies that it's a state responsibility, and if the state doesn't currently have a structure that would easily lend itself to doing that, then they would have to create a structure to do that. There may be parties within the state government who want to do that. There may be entities at the local level who don't want the state to do that, and it can make -- it could make it difficult.

Now, as I listened to this, it sounds like it all depends on what comes out in the actual regional plan, which is still the regional planning committee that has the responsibility for holding the public meetings, getting the comments, and getting that plan submitted. So I guess we can handle it through that process and it can be vetted out against all the interested parties and come up with a solution.

MR. BUCHANAN: Yeah, I think that's really the end result.

MR. WELLS: I think what he was getting at maybe is keeping the decision open until discussed between the potential state interoperability executive

committee and the RPCs involved. So I might add this phrase and see how this goes over.

Reading the first sentence, "State interoperability executive committees should be formed to administer the state interoperability plan in each state and territory in consultation with the RPCs involved."

And I think from a legal standpoint, and Michael, correct me -- where did you go? Okay, correct me later. The phrase "in consultation with" puts the RPCs in the ultimate say so over this whole matter since the RPCs are specifically referenced by rule and the state interoperability executive committee is from the NCC making a "should" statement out of this. It keeps the RPCs in the driver's seat.

But understand too that the RPCs are in the driver's seat with the general use channels. We're in the driver's seat with the interoperability channels, and we're talking about an interoperability issue here.

But still, that keeps the RPCs in some authoritative position with the state interoperability executive committee by awarding it in consultation with.

Does somebody know if that's legally correct or not?

MR. SORLEY: I don't know. Again, I'm Tom Sorley. I just have one more comment.

MR. BUCHANAN: Sure, go ahead.

MR. SORLEY: In my opinion, it should read that the regional planning committees ought to be charged with having the agencies enter into this memorandum of understanding, and if they choose to form a separate body to administer it, they have that option.

To me that more clearly delineates that it's the regional planning committee that is responsible for developing the plan. And if they in turn wish to create this committee, that it's suggested that it might be at the state level or whatever. That to me is more much appropriate because we already have a mechanism in place to get input. We already have all of this stuff coming together to form the regional plan. To me it seems that group, it ought to clearly delineate that that group is the one who is responsible for this -- the creation of this agency, if you will, if they deem it necessary. That's my feeling on it.

MR. BUCHANAN: I understand what you are saying. Just a second, Art. I understand what you're saying. I think where we came from was that the committee that's formed, if it's formed at the state level, has to be representative of everyone, not just the state. It's just not the state in the driver's seat; that this interoperability committee includes the local users also. So either way the local users are going to be represented, if that helps any.

I'm trying to remember, and maybe Art can remember better, there seemed to be a lot of consensus at the meeting where we discussed all this in pushing for the states to do it -- to hold the licenses at the state level, to make it easier for administering the licensing aspect of it. If it's not done there, then it drops down and you will have to get your counties or possibly even cities to hold different licenses for the areas. It just made it cleaner for the state to hold the overall licenses to implement the interoperability.

But go ahead, Art.

MR. MCDOLE: Well, part of the earlier discussion, if you will recollect, was the fact that some regions are more than one state and some states have more than

one region. And we were trying to accommodate all that in what we did; that there might be three or four states with committees in one region, and conversely.

So perhaps -- Carlton and I applaud your effort. Maybe the word "by mutual agreement" between the states or states within a region that it should be done. I think we can agree on these things. It's just leaving a mechanism that was suggested by Tom that the regional planning committee is by the FCC rules and regulations is the governing body and any of that supersedes any state authority. Unless they choose, the regional planning committee chooses to hand the licensing over to a state because the regional planning committee is not a licensing authority.

MR. BUCHANAN: Yes?

MR. WELLS: While he's walking up here, I don't want to put the brakes on this, but a fundamental premise by all this activity is that a decision or a consensus was reached at a previous meeting. It resulted in a recommendation in here.

MR. BUCHANAN: Yes.

MR. WELLS: And now we're bringing it up again to discuss.

MR. BUCHANAN: Yeah, I hear what you are saying.

Go ahead, Harlan, and then --

MR. MCEWEN: I'm Harlan McEwen, representing the International Association of Chiefs of Police, and I'm sorry I came in in the middle of the conversation because I was out at another meeting.

But this is something that is very -- of great concern to the police chiefs, and I kind of support what Tom said earlier, and Carlton, I think you said it, but I want to make sure that the record clearly shows it.

The regional planning committees have to be the responsible people, not the state, not any kind of state entity, because of the fact that we do have multiple state involvement in some region and other things. We would never get anyplace if we had to develop a relationship with the "political process", as I say it in quotes, where, you know, each state would have to agree to something.

Really, this should be driven by the public safety community. The regional planning process that we have seen in the past and we hope to see in the future is driven not by the political process, but by the users, by the practitioners, by the public safety community, and they have to be in charge of this.

And if you start putting into place a state bureaucracy, so to speak, if it works in California, if it works in Florida, if it works some other place and the regional people endorse it, that's fine. But I don't think we should impose into that anything that's going to make this almost impossible to work well.

MR. WELLS: I like your phrase when you say "by mutual agreement," and I'll finish it off, "with the RPCs involved." I think that's more up front and cooperative than this sneaky legalese of "in consultation with". I like your phrase better.

MR. BUCHANAN: Why don't you repeat that and if we have consensus. I think that's more of a clarification than a change in any of the intent.

MR. WELLS: Correct.

MR. BUCHANAN: And I think we could go ahead and adopt that and recommend it to the full NCC.

MR. WELLS: Okay. Recommendation one of Appendix E. It's all in the first sentence. "States interoperability executive committees should be formed to

administer the state interoperability plan in each state and territory by mutual agreement with the RPCs involved."

After that the rest just gets more detailed and specific about what's going on with the SIECs.

MR. BUCHANAN: Does that satisfy the concerns that were brought up?

(No response.)

MR. BUCHANAN: Okay, I saw the heads nodding yes just to get it verbally said here.

Is there any objections to that change then? Does anybody have a problem with it?

(No response.)

MR. BUCHANAN: Okay, then it looks like we have consensus to make that change and we'll do that. We'll report that out to the full NCC as a recommended clarification.

MR. BUCHANAN: Okay. Is that --

MR. WELLS: Yeah.

MR. BUCHANAN: Okay. That's the end of what Carlton has for Work Group 3. Is there any other comments before we go on to the next work group on that since we covered a lot of stuff?

(No response.)

MR. BUCHANAN: Okay, Work Group 4, liaison with outside groups. Don couldn't be here. He did send us a short note on just an update of what's going on, and basically he's saying that Motorola has been working on contacting all regional

coordinators to make sure our information is correct, and to find out what the status of conveners is for the 700 MHz band, and that's all he had to report.

So I hope he wasn't speaking out of turn for Motorola there, that you are doing that?

THE AUDIENCE: We are.

MR. BUCHANAN: Okay. So that's -- actually, there is not a lot to decide in form. It's just to keep working on those issues to make sure that we have conveners and that we get the regional planning effort going.

Okay, we're at the last item of the agenda.

MR. SCHLIEMAN: Adjourn?

MR. BUCHANAN: No, not adjourn, before we adjourn. You didn't let me finish, and I know it looks like we are really racing through this stuff, but I suspect we will slow down a little bit with the wideband data issues.

I think the first thing I'd like to bring up -- again, we're going to have to consider some of the technology stuff. The report for the technology depends to a great extent on what we decide for the Statement of Requirements the users needs out of this interoperability group, so we will be considering that also, and I suspect that the discussion will probably flow back and forth a little bit.

But if you will -- there is a document from Craig Jorgensen, the chairman of Project 25, and it's a good document in that it sums up why we need to come to a consensus on these issues as quickly as we can to keep the process moving through TIA so that we can have a standard for the wideband data, for the interoperability, and again

it's an issue of that needs to be done. I think that gives then the manufacturers, gives them their guidance to develop product and all those other issues.

I can tell you that, at least in my region, southern California, there is just overwhelming demand for the wideband data. I know for a fact that we won't be able to satisfy all the needs because we had one large entity who asked for more channels for data, for wideband data than there are wideband data in the plan for the spectrum. So that's not to mention everybody else that asked for it.

We lovingly refer to them as the "state of L.A."

So with that, on the back table, if you didn't grab it, there is a document, "Interoperability Subcommittee, Work Group 6, Wideband Data User Needs Document, Draft 2."

And I can either open it up for comments, or if somebody has something burning that they would like to --

MR. SCHLIEMAN: I have a couple.

MR. BUCHANAN: Okay, we have -- we have that option going here.

Why don't you go ahead. Eventually what I would like to do is get through the summary of key features, if we don't hit on everyone of these paragraphs in here, and I did try to number each paragraph so that it would be easy to reference in here.

So go ahead, Bob.

MR. SCHLIEMAN: You make an observation that there is no specific user need identified that would justify supporting multiple bandwidths. You want to go to the maximum, 150 kilohertz. Yet in the examples, you want to have what you call short range up to 10 miles. I'm not sure that that's necessarily possible to get 10 miles of

coverage of 150 kilohertz channel width with the kind of power levels that you're going to be running in a mobile environment. Maybe in a broadcast environment but --

MR. BUCHANAN: Well --

MR. SCHLIEMAN: -- not a mobile.

MR. BUCHANAN: -- that was considering that mobile may include a helicopter broadcasting down which could go up as far as 10. That could happen.

MR. SCHLIEMAN: Well, if you have helicopters that fly at 52,000 feet.

MR. BUCHANAN: Well, you know, they don't have to go up too high. You can get 10 miles line of sight real easy.

MR. SCHLIEMAN: Okay, my point was that this isn't just specific to helicopter activity, right?

MR. BUCHANAN: No, no, it's all --

MR. SCHLIEMAN: Clearly, every --

MR. BUCHANAN: -- mobile-mobiles and airborne mobile, both.

MR. SCHLIEMAN: Clearly, airborne platforms will give you greater coverage because of its light of sight and you don't have too much in the way of multipath like you do on the ground.

But in a generic sense the reason that you would probably want to have multiple channel widths is to get the highest data rate possible under the conditions that you have to operate. And when you talk about, you know, operating on the ground you have some really horrendous propagation issues to deal with, and 150 kilohertz might get be around two miles max at best.

MR. BUCHANAN: Without a repeater, I'd agree, yeah.

MR. SCHLIEMAN: Well, that's what I mean.

MR. BUCHANAN: Yeah. I think in most cases it would require a repeater.

By the way, I also, and we can do it at anytime here through the discussion, I put together a video. One of the key uses that seems to come up with this wideband data is sending compressed video for different uses. And we happen to have in my county a court video arraignment system that we have just recently started upgrading to work over our internal wide area network using packet data.

We have equipment that runs it at different speeds for the compressed video, so I can show you a video that kind of shows the quality you get at different data rate speeds starting at 128 kilobits and going up to 385 kilobits.

So I don't know if we can -- would that help to see that first on some of this? I don't know --

MR. SCHLIEMAN: Sure.

MR. BUCHANAN: Okay. Why don't we do that and then we'll get into the issue that Bob brought up over the different data rates as part of the standard because I'm truly not wedded to any of this. When I went through and put it together, I just -- what I could come up with, put it together and I haven't had a whole lot of feedback over the internet on it, so let me get that tape back to the folks in the back room there so we can put it up on the screens.

(Pause.)

MR. BUCHANAN: This uses what's called the H323 standard, which is essentially the IP, sending it as an IP packet so it can be sent anywhere over the internet

as long as you have the bandwidth available. It uses all -- the basic compression is the H, I think 263 is the compression standard that's used for it, and it's -- you will find that it's a very amateur, couple of my techs that -- well, one tech that's in it and the other one that set it up for me, but it was done over our internal LAN so it's basically error free. This is showing you the best you are going to get at that data speed. It would be equivalent to the -- to error corrected throughput.

And I guess one other observation, just to give you a little background on the system so you understand what we've been doing, if you're not aware, when someone is arrested they have to be arraigned and that process is in front of a judge. Instead of physically taking the prisoner in front of the judge for the arraignment, we have this video system where the prisoner stays in the jail. They are brought to an arraignment room. Here it is.

MR. BUCHANAN: Well, here's us.

Okay, the first speed is going to come up as 128. Here is where we are setting it up. That's not it yet.

(Video played.)

MR. BUCHANAN: The audio is the noise but this is 128 kilobit. This is a tech. I just had him move around.

No, he's not being arraigned. He thought he was a Hollywood movie start.

(Video played.)

MR. BUCHANAN: He's actually back in one of our equipment room so there is a lot of background noise and he's using just the wireless omni directional microphone.

(Video played.)

MR. BUCHANAN: Mainly you are interested in movement because you will see here -- okay, here it comes. We're going to do what's called a freeze frame.

(Video played.)

MR. BUCHANAN: Okay, there is what happens when there is no movement. It's called the freeze frame. So you can see that it just clears right up.

(Video played.)

MR. BUCHANAN: So you actually have pretty good quality as long as you're not moving.

(Video played.)

MR. BUCHANAN: Okay, it would be at 192. Okay, this is 196 kilobits.

(Video played.)

MR. BUCHANAN: You lose more of the smearing there although you can see it when he waves his arms.

(Video plays.)

MR. BUCHANAN: Okay, this is 192 kilobit.

(Video played.)

MR. BUCHANAN: Oh, I'm sorry. Yes, this is 256. I'm sorry.

(Video played.)

MR. BUCHANAN: Okay, and this would be the last speed, 384.

(Video played.)

MR. BUCHANAN: He's telling him he should start doing some jumping jacks.

(Video played.)

MR. BUCHANAN: Okay. Well, that's really the end of it. It will cut off here in a few seconds so you can go ahead and cut it off.

Again, I did that just so that you would get a little better feel of what the quality is at some different speeds of compressed video. Again, and the only reason I want to go into the background a little bit of the system is to give you an idea of how it started and where the technology has gone to.

When we first started this arraignment system, and basically as I said, it's so the -- it really enhances safety. They don't have to take the prisoners out of the jail to do this, and it's safer for the judge. He doesn't have to have the prisoner that's all upset in front of him, or several of them. So it started out, the original equipment back in about 1986 or so when we first started this, it used a half of T-1, and the quality was barely what you saw there at 128 kilobits. That was about the quality we got out of half a T-1.

The next generation, we went to a company called Picture-Tel with a proprietary format and it's equivalent, more equivalent to probably what you saw at 256, although it ran at 128 kilobit, so this STAN H-263 standard is not the best that you can get at that speed, but it's something, I guess, that everyone could agree to is the standard.

Of course, now we are implementing this so we can just do it over our wide area network and not to have to have dedicated circuits that we switch around.

Anyway, hopefully that will help some as we discuss this and decide what speeds we need to see for interoperability. I think it shows one thing clearly. If you're going to have a picture that has very little movement, you can slow the speed down quite

a bit. If you're going to have video sent that has a lot of movement in it, you want to get the speed up as high as you can to capture that movement and have less smearing.

But go ahead, Bob. What would you propose that we do have?

MR. SCHLIEMAN: Well, I just question that we want to be so absolute as to only have wideband. The applications for digital are many and certainly some of those applications are not necessarily as encompassing, or as exhausting as video is.

One of the examples cited in previous meetings was bringing a fire apparatus to a wild fire and while in route sending in its capabilities to the command post so that they could appropriately assign it and save time running around; just go directly to the scene.

That doesn't require a 150 kilohertz bandwidth to do that, but it does require something that can operate in a mobile and motion environment. That's just one concern that I think needs to be dealt with.

MR. BUCHANAN: If we went that direction, then I'm assuming that you would want to see -- if we go with multiple rates, would it be with the radio has to be capable of the highest rate even though it transmits on lower rates so that it includes all there bandwidths?

MR. SCHLIEMAN: Well, I'm not necessarily convinced that it --

MR. BUCHANAN: And if you don't have that, how do you keep interoperability between a radio that's as 50 kilohertz bandwidth to another one that was set up for 150 kilohertz?

MR. SCHLIEMAN: Well, I guess the question is you, do you have interoperability channels set aside to operate on an individual channel width, or do you

have interoperability channels that are set aside to operate on whatever comes in the antenna jack?

The applications may vary in terms of the ratio of the types of transmissions from more text type data to more video type data, depending on where you are in the country and the type of interoperability situations that they have in those areas.

I appreciate the fact that in California video is a very high priority, but when you get into terrain where a helicopter isn't the first thing that's available and you need to have wideband communications for whatever applications, it seems like you may want to choose something with a somewhat lower bandwidth to get a little bit better range on it.

This reminds me of the PCS development. PCS doesn't travel as far as our HF radios. They have a very intense -- doesn't travel as far as cellular at 800; takes considerably more infrastructure to make it work, and one of the issues, of course, is that it would be nice to have a ubiquitous system and the reality is it won't unless somebody has an enormous amount of money to put into it.

So in trying to consider all of the areas that we need to deal with, it would seem that there might be a need for an error interface that either automatically adjusted according to the particular transmissions that was coming in the door or you had separate air interfaces for the different bandwidths.

MR. BUCHANAN: Well, I'd sure like to hear from some of the manufacturers, but it would seem to me that unless we have a radio that adjusts to the different speeds, obviously you can do, excepting for range which was very hard to find anything definitive, I did find GSM, I believe, I don't know where I have it in here, it may

be in the other document, but the range for it with its repeaters is up to 35 kilometers, which is a fair distance.

But I don't know how we have true interoperability unless each radio can talk to the other radio. If we start breaking it up and say, well, we have 50 kilohertz radios that will talk to 50 kilohertz radios, but not to a radio of another speed, then we are going to end up eventually in the future with these different radios at the scene but they still won't talk to each other, and that's what worried me about having a different standard, different bandwidth unless each radio had -- was capable of all three bandwidth, then we could do it that way, I think.

Is there any other --

MR. SCHLIEMAN: I would like to hear Steve talk on this because I'm sure he's got some thoughts.

MR. BEEFERMAN: Well, let me try to give you a range of some things that we have done; give you some food for thought because we haven't all the answers either, but you know, we played a lot around with things.

I guess back about two years ago when we started we did a demonstration to the Commission, show what you could do with wideband channels to promote the allocation of wideband channels. And at that time we were looking at, you know, a number of things: impact of speed on range, cost, and the overall performance.

In fact, just as a side note, we filed -- when we saw the notice, the report and order that produced the current 700 megahertz rules, we put in a petition for reconsideration to waive some of the bit rates under certain circumstances because of the cost impact.

Just to give you a general idea, what we demonstrated back in July of -- I guess it was '98 -- was a 128 kilobit modem running 150 kilohertz channel, it was pretty much the cost of a conventional radio, 500 to a thousand dollars, depending on how sophisticated the car was and general idea.

On the other side of the things we were looking at what happens with speed and performance, and today, for example, parameters, we looked at and had experiments with running -- we were already at 64 kilobits in 25 kilohertz channel, getting a rough error corrected radio of 32 kilobits, thereabout, but we were running at speeds up to 100 miles an hour, and the performance of that is -- in terms of range with this parallel decode technology that we've developed, which is basically an additive signal technology, it basically utilizes the ability to rapidly add two different signals together to get the benefit of the combined signal level, improved the decoding. In that context, we were able to get some ranges at that speed that traditionally equal to what you get in types of environments that you see today -- 50, 20, 25 miles, depending upon the nature of the antenna height, but typically what you would consider a range from a land mobile base station.

On the other side of the scale we were looking at what happens when you get up to the high rates and things change dramatically. We're able to take the same system, and one of the objectives we had was to try to scale the system, make the same system scaleable so that you could operate at narrow band channels, operate it at lower speeds, and operate it at wider channels and higher speeds, and not essentially start all over again in terms of a design.

So I think at the rate of 380 some odd kilobits w e had a net throughput of about 242, I think, was the number, to give you a general idea. Ranges dropped down to something like five to six miles. The parallel decode will pick it up to get maybe eight to 10 miles at the current state of the art of what we're doing.

So there is ways to improving things, but the problem is it's trade-offs. It's all trade-offs between cost, trade-offs between, you know, speeds. I think in your write-up the idea of motion was maybe discounted because of the issues of speed and trade-off in range.

MR. BUCHANAN: And that was basically because I couldn't find anything or drag out of anybody that anyone had done any studies at this kind of bandwidths versus mobile speeds. So in absence of anything concrete, I tried to -- actually throughout the document -- if there was some thing that was going to be a limitation, then it was basically throwing it out there and saying, okay, that's the trade-off. If you want this wide or higher speed, then you have to trade off and give up this.

MR. BEEFERMAN: Right. In fact, the rule of thumb that we sort of came up with at the current moment is if you want to relate the speed you can have at a wideband channels versus the sensitivity or range, triple speed by tripling the bandwidth, and it's one-third times -- one-third the range, and that's the price you pay. It's very significant.

Of course, those are just very rough numbers. It's still an exploratory thing. But one thing that's important, we are trying to match up what we can do with evolving technology. For instance, GSM chips, EDGE chips are being developed by various manufacturers, Intel, whomever. The whole thing is going to be a function of,

you know, do you want to buy such a modem or such a radio that operates at, you know, perhaps 350 - 384 kilobits raw rate and gets a 10-mile range, if you have to pay $10,000 for it. That's another parameter. We don't know where that plug into the equation. What is a user willing to pay for that level of capability?

I mean, we see a lot about the uses and perhaps the level of satisfaction as far as the quality of what they get, but nobody has sort of tied it to, yeah, that's a good deal, or we're not going to -- we're never going to buy that. I mean, I can understand that phraseology when some of the price tags that come out.

So basically that's the synopsis of where we have seen things develop. I don't know if other manufacturers have anything else to add to that.

MR. BUCHANAN: Com-net or Motorola, can we get any comments out of you guys?

MR. HOFMEISTER: Ernie Hofmeister from Com-net.

No specific comments but maybe general. When I look at the technology report, which we haven't talked about yet, I sort of get the sense that there has been a dismissal of GSM and EDGE technology, and -- well, let me just --

MR. BUCHANAN: Well, let me address that real quick because I wrote that up, basically threw it out and it does -- and I want to emphasize that it says "Draft" on there and that I'm trying to get feedback, and I didn't get a lot of feedback.

The only thing that struck me as I looked at GSM and trying to adapt it for what we do is, one, we would have to change the bandwidths to 200 kilohertz, which I can understand. I guess we could -- you know, we could submit that as a change, although the trade-off for that is we don't get any -- I don't think we would get any more

throughput than what we are getting out of 150 kilohertz, and there are some adjacent channel problems, it looked like to me that I could see with the JSM, the way it's done, and the fact that there really -- they are putting essentially 800 kilobit into a 200 kilobit or four bits per hertz, and really pushing the envelope, and there is a lot of inner symbol distortion that has to be taken care of at the receiver.

So everything is more complex with GSM, and you get some trade-off because I don't think we would get -- pack the channels geographically as many into the same area as we can by backing that off some. So that was my thinking. If it's wrong, please correct me. Or if there is some other trade-offs that make that desirable, then I'd love to hear about it too.

MR. HOFMEISTER: Yeah.

MR. BUCHANAN: But that's just to give you an idea of where my thinking was.

MR. HOFMEISTER: Yeah, my only comments would be sort of in general following Steve's comments in terms of cost of product, cost of development. I think the public safety community needs to be careful not to so tightly and overspecify what they want that it demands a completely new development of a product where it would rule out maybe using some commercially available chips or chips that's to provide, you know, good capability, but at a reasonable cost.

So as you go down this road, as we go down this road I think we need to keep that in mind. So from the technology committee you might ask, you know, what's the technology assessment in terms of building a product to meet those requirements? Is that a new development? What's the risk involved? What's the scope of the effort

required to do that? And how many companies are there out there that would have the resources and the commitment to do that? And would you end up with a competitive marketplace?

And that's why I sort of keep coming back to -- you know, we know in the commercial world there is many, many dollars being send and many, many engineers working on some of those things, and in the public safety side there is fewer resources and fewer dollars.

I mean, I know within Ericsson, and I'll say on EDGE for example, I would guess that there is probably over 750 engineers now working on EDGE, and, you know, probably not -- that will be over several years, plus the chips and so on.

So I think we just need to be careful to -- carefully look at what's available and maybe derivative technologies and try to avoid something completely new.

MR. MCEWEN: I support what Ernie says. I spent most of last week out in Denver at an International Association of Chiefs of Police Law Enforcement Information Management Conference in which the vendors were predominantly data people. They weren't wireless oriented in the greatest degree. In other words, there were people there that certainly were not unaware of the wireless integration needs.

But the -- you know, they started -- not being an engineer and being a practitioner as I am, they were kind of going over my head a little bit. But I mean, they started talking about things that when I talk about compression, they say, well, that isn't what we're talking about. We're talking about something, you know, new and different, and we've got all these different ideas about how we're going to, in my view, compress or change or whatever the data in a way to make it faster and easier and use less bandwidth,

and most of them are thinking about it in terms of -- a lot of them are not really thinking in terms of wireless.

So what happens is that, you know, in my usual way I keep throwing into them the fact that we're getting closer and closer to all of this, you know, starting from the very wireless hand-held pocket device, going through them message worldwide networks on, you know, other ways. And the fact that whatever you do here, you know, I get lost in the bits and the kilobits and all that stuff.

But the fact is that you want a standard, if I heard you right, Ernie, in a sense saying that it does not constrict us from something that may be under development right now that we don't really even envision in our mind that we would want to take advantage of.

THE AUDIENCE: Like a derivative.

MR. MCEWEN: Yeah, or a derivative of it. So I support that and I don't know quite how to do that, but I leave that to all you technocrats sitting around me here.

MR. BUCHANAN: Well, I know one of the issues, you know, if we go in the direction and saying, well, how well can we leverage the efforts of GSM and EDGE. For anyone that's not familiar, I had to look all of this up -- it was a pain.

But anyway, it's essentially GSM right now is a voice technology. It essentially eight slots of voice in a 200 kilohertz bandwidth of TDMA. EDGE is kind of interim step to get to where they can pump high speed data over this existing GSM network. And obviously, there was -- again, there was some trade-offs, and I agree with what Ernie is saying. I mean, there is going to be chip sets and there is a lot of development, but there is also -- because they had to fit that into still working with the

existing voice in those slots, there is trade-offs to what they end up with as data throughput out of all the effort, and what you end up with, and what it would do to our band plan, I worry about that.

The other thing is Bob brought up that, you know, what he's interested in is what's the maximum range. Well, the maximum range, again, is a trade-off of bandwidth too so that if you go with 50 kilohertz bandwidth, yeah, you can get more range. However, if you go with the GSM and the EDGE technology, you are stuck at one bandwidth. They are not making the chip sets for 50 kilohertz or 100 kilohertz. They are only making them for 200 kilohertz and that specific way of doing things. So those are some other trade-offs.

But we need to work through that as much as we can, if we can today come to consensus on this to keep the process moving. Otherwise, we're going to set it back about three or four months waiting till September.

Anyone else -- is there any other comments? Anybody have some other ideas on this on where we should be going or is it basically whether we need to decide between changing the band plan to 200 kilohertz and urging them to look at the GSM or the alternative of staying with the band plan we have but one radio at 150 kilohertz bandwidth, or as Bob suggested, having the radio that's capable of the three different bandwidth so that you can get some more range out of it.

MR. SCHLIEMAN: Dave?

MR. BUCHANAN: Yeah.

MR. SCHLIEMAN: Over here.

MR. BUCHANAN: Yeah, go ahead, Carlton.

MR. WELLS: I drew up a little picture trying to come up with a method of approach. At times we bounce around between what bandwidth do we need, 50, 100, 150, you mentioned a potential for arguing for 200, what speed do we need, and based on that speed what range can we work at, and if we need a longer range, can we live with a smaller speed.

We are dealing with a bunch of variables right now, and to try and get a handle on those variable and let them be a function of what the user needs requirements are, those variables may come down to a solid ground ultimately.

If we dwell on the user needs first rather than what technologies are out there, then certain technologies may come out and other ones may fall through, and then we have a limited set to work with, and based on the user needs we know if we can live with those limitations, how far can we talk as far as range and all that.

To help nail down the range, the document that you proposed, the draft document here that you, Draft 2, 4-25-2000, and again it's just draft, you mention 10 miles, but further if you use a repeater, but yet there was a discussion that if even 10 was possible point to point. And I think I heard two miles point to point, and maybe 10 with a repeater. So that further emphasizes that this is a draft.

But the picture I drew up central -- revolves or doesn't start with the channel width. It merely states the different widths, 50, 100 or 150 kilohertz. And the channel width or bandwidth that you need is a function of the type of device that you're using.

If you are merely sending text, does that need only a 50 kilohertz channel bandwidth versus ending video, full motion or still? Does that require 50, 100 or 150?

Or a fax, what channel width does that require? What is your false size, and what is your transmission speed that you require? Do you need that information?

Let's use text. Let's send just five lines of text. Do you need that in a split second or can you deal with it taking 30 seconds to get to the other end? So what is the user needs speed?

And the type of information that is, that this information is, is it fire information, law information, EMS information, disaster information or just general interoperability information that can live with a longer transmission speed than a short one?

If it's in the case of a dire emergency or imminent danger to life and property, ultimate speed and false -- ultimate speed, I think, would be a big factor in this. But if it's just information that can get to you at any time, it can have three or four retries before it manages its way through a 50 kilohertz channel width.

But depending on the type of device that you're using -- text, video, fax or other type of device -- let the RF modem be a function of that, and then that modem decide whether a 50 kilohertz, 100, 150 is required to get it across based on the false size and the speed you need to get it across, and the range that it has to pass it through, either a repeater or not.

And essentially what that's boiling down to is a dynamic bandwidth. Allocate the full 150, but you can use 50 at a time depending on if it's text or full motion, high speed video.

Starting with the fire or law or type of discipline and then the device you want to use, the RF modem picks the bandwidth based on those parameters, and those

parameters might be a standard that we set here on what is allowable for text so that you don't try to send it at breakneck speed, but rather a sensible speed, depending on the discipline of information that's coming across.

MR. BUCHANAN: Well, yeah, I hear what you are saying. There is a couple problems though.

First, you have to know somehow the -- the modem that is sending the information would have to know how large the file is, and if that's coming through the internet or something like that it may not have that knowledge ahead of time.

MR. WELLS: It would have to be the up front addressing that says you're about to get a text file that's 5K, sending it 184 kilobits.

MR. BUCHANAN: Then you are looking at a lot of standard writing to do that in the applications.

MR. SCHLIEMAN: The modem in my computer does that right now. That's an oversimplified view, but why should not an RF modem be as capable as a wire line modem?

MR. BUCHANAN: Well, your modem rate adapts, but it doesn't have a clue how much data is actually being sent over.

MR. SCHLIEMAN: No, but it's a singling protocol that is used to transmit the files does. It communicates information. Certainly you could start out slow, exchange that basic information, and then speed up according to the conditions.

MR. WELLS: Like right now the modem that we use, a lot of us I'm sure, and I just got it in mine because of insurance, they bought me a new computer that had a 56K modem in it. But my phone line does not handle 56K. The best I can send is 24K.

MR. SCHLIEMAN: Yours too, huh?

MR. WELLS: And if it's really noisy, I'll drop down to what, 19.2. I think I'm stepping in the right direction.

MR. BUCHANAN: Okay, you're saying trade off --

MR. WELLS: At the other end, that was a step down with me.

MR. BUCHANAN: Yeah. But you are using -- you are trading off speed for the same bandwidth and you're trading off the length of time it takes to send the information --

MR. WELLS: Yes.

MR. BUCHANAN: -- based on the quality.

MR. WELLS: Yeah. It's a third factor thrown in here is bandwidth, yeah.

MR. BUCHANAN: Yeah. You're not basically saying that you are rate adapting the bandwidth, you are rate adapting the speed.

MR. WELLS: Yeah.

MR. BUCHANAN: But Norm, go ahead. You had a comment first, and then --

MR. COLTRI: Norm Coltri, RCC Consultants, another short joke.

MR. BUCHANAN: Sure.

MR. COLTRI: First of all, I think Carlton was right on his observations, and I just wanted to comment on the report.

I think it's a fine technical report. However, I don't know if that is exactly what we should be focusing on in this committee at this time. I think there are issues that have to be addressed where we address the applications and say what we want to do and

how we want to do it, and let the technical committee worry about how technically to accomplish that.

MR. BUCHANAN: Well, I thought that's what I did in the user needs document basically.

MR. COLTRI: Yeah, but what we are not addressing are the really significant issues that are really going to be the blockbuster issues is the administration of an interoperable date network. I don't see anything that we've addressed yet --

MR. BUCHANAN: No.

MR. COLTRI: -- that's going to address permissions, that's going to address registrations of mobile units that are just coming into an area that may -- you don't know someone is coming into an area. He shows up on your doorstep. How do you handle permissions? How do you handle registration? How do you handle someone that is trying to come into your network to hack it? How do you handle all of these things?

This is what has to be built. We have to decide how that is going to be handled, and I think that's a more important issue than the technical. The technical issue will work itself out. The administration of an interoperable data network is a bear, and I don't think we have even started to think about that yet unless somebody has and they just haven't written it down.

But do you have static addresses for every mobile unit in the country? Do you assign dynamic registrations as the come into the area? Well, then how do you verify that I am who I say I am when I come into your area? There is massive amounts of information that has to be processed, and I don't think we have even touched on that yet,

and I think that's something that is really more important than the technical end of it at this stage.

MR. BUCHANAN: Well, are you proposing then -- I don't disagree that that effort has to be made, but are you proposing that we make that effort and spend that time before we ask TIA to start developing the technical standard on how to do this and delay people getting on the air because basically they are not going to get on the air for anything until this standard gets put together?

MR. SCHLIEMAN: I think there are two parallel activities. Clearly, you need an RF platform in which to run that protocol. And you are absolutely right, we need the protocol on how this whole thing is going to communicate given the RF pipe to communicate over.

I really think that we need -- we need two processes here, and this goes back to the business of having a vocoder definition along with the RF part. It's the data equivalent. You've got to have the protocol to communicate over the RF pipeline.

MR. COLTRI: Being an interoperability issue, this is not something that we can leave to the RPCs to manage the registration of their mobile units within an area. This has to be handled globally because you will never know where a mobile unit will be coming from. It will show up on the interoperable data channel either wideband or narrow band, and you have to have a way to address that.

It has to be, as Bob said, a parallel operation and we seem to be focusing on the technical end of it, and that may be well and fine, but if we can't finalize the administrative end of it the technical end doesn't really amount to very much.

MR. BUCHANAN: Well, I think, and I could be wrong, but as I remember from our narrow band the Project 25 has registration processes and all that in it.

MR. SCHLIEMAN: Not to --

MR. COLTRI: To the best of my knowledge, that is for the individual systems in the general use channel where you build your own network, and the P-25 will give you a way to administer your network. But I don't believe it addresses the ability to do an interoperable network where you have to handle mobile units from unknown jurisdictions at various unknown times.

There is a difference administering your own network as opposed to administering the whole country.

MR. BUCHANAN: Yeah, but the tools are there to do that. The basic tools are there. I agree that from a user standpoint, somebody that is actually going to go out, they are going to have to use those tools. But they are built into the standard and they have managed to do that in the standard without knowing everything --

MR. SCHLIEMAN: Within limits.

MR. BUCHANAN: Within limits up front.

MR. SCHLIEMAN: That's the problem. How do you size the limits.

MR. WELLS: Dave, I would like to ask the audience and the folks up here at the table too if anyone is familiar with the OSI model?

If you think that's beneficial to what we are discussing to understand that model, it may help us draw boxes around each level in that model.

I'm just becoming familiar with that. A co-worker back in Florida loaned me a book on SNA, and my wife wanted to know why I was reading it. In her mind, SNA is dead. And it's not SNA I wanted to read on. it's the OSI model that's described in the book.

MR. BUCHANAN: The OSI --

MR. WELLS: The OS level of OSI.

MR. BUCHANAN: Yeah. OSI is addressed in the Project 25.

MR. WELLS: Okay.

MR. BUCHANAN: I think it shows the different levels.

MR. WELLS: To where the --

MR. BUCHANAN: Yeah.

MR. WELLS: -- 50 kilohertz bandwidths are the pipeline which we're sending it may actually be somewhere around level four or level five. The user needs may be down around level two or level one. And depending on what you do there, you have got to get through level three and four before you even get to the pipeline, and we shouldn't be as concerned about how we're going to interface with the pipeline with these applications as much as we are with the interim levels to get to that pipeline.

So if we are inadvertently jumping over some of these levels, that adds to the complexities on why we are not able to reach a resolution on some of these issues.

MR. BUCHANAN: I agree.

MR. WELLS: And Steve, you were nodding your head. Am I close to what OSI is about?

MR. BEEFERMAN: Yes, I think you are very close actually. If you recall back in New York, I think it was the New York meeting, they tried to give a little presentation about the issues, and I guess this probably is a good reflection on the issue because the process of data communications is related to that model, and it applies in the wireless world just as much as it applies in a wire world, if you want to have, you know, universal communications.

The whole process can be made up of a combination of standards. At one point in time we were looking at databases, and how could you specify that your database and my database could talk to each other. It was a thing called SQL, structured query language. There is a standard for that. It's an IBM standard. That could be adopted in concert with an error protocol, and in concert with a couple of other standards.

But you have got to look around, find appropriate pieces to put together to satisfy the requirements that exist, and again, I think, Norm pointed out the operational requirements kind of drive what pieces you try to find to fit together, if that makes sense.

MR. BUCHANAN: Yeah, I think from that standpoint, yeah, the internet protocol, which is really going to drive everything, I understand where you are coming from. But at the same time that you say you need standards, there is -- you know, file transfer protocol but that doesn't depend on -- you don't need -- the radio standard can be built for the radio, one radio to send data to the other radio without knowing that information ahead of time, that standard ahead of time.

I mean, we can come down the road and say, well, we want to get everybody to talk to everybody else. You use file transfer protocol, internet protocol over

the radio which has the standard for talking and sending packets from one end to the other. To me, that's separate.

MR. BEEFERMAN: Well, yes, but that's one layer in this OSI model.

MR. BUCHANAN: I agree but --

MR. BEEFERMAN: It's the communication layer that's a hard --

MR. BUCHANAN: Is it a layer that you need to build your RF modem?

MR. BEEFERMAN: Well, it's not just that. I mean, what is the user need to go from here to Maryland or whatever and know that, you know, the kind of data information or data communications they want to interoperate with; that the data that you have is organized in such a fashion that I can recognize it and access it.

Yeah, we may use some protocol to transfer the information, but how the information is formatted and how you access it are just as important. I hope that maybe --

MR. BUCHANAN: Well, I get all kinds of data over the internet and I don't know how it's formatted ahead of time.

MR. BEEFERMAN: Well, the device that you're using uses a standard that knows what you want and translates it but that's --

MR. BUCHANAN: You know, I can send a word document from here to wherever in the world, and as long as someone has application that will read, you know, Microsoft Word, then they can read what I need to send.

MR. BEEFERMAN: Yeah. They standardize of Word and you standardize on Word.

MR. BUCHANAN: Yeah, and --

MR. BEEFERMAN: And translate that same information. But if they have another word processing program, you're not going to communicate with them.

MR. BUCHANAN: I agree but I didn't -- but I could send the information from here to there regardless --

MR. BEEFERMAN: But if they don't have --

MR. BUCHANAN: -- without knowing --

MR. BEEFERMAN: -- the layer that converts it into a format --

MR. BUCHANAN: I know, but at some point the users are going to -- the fire folks and the police folks are going to have to decide what information. How are we going to sit here at this level and know that we've captured every bit of that? I don't understand that.

MR. BEEFERMAN: I did not say this was easy, and I think I have expressed that somebody is going to have to come up with a national plan to provide some kind of standardization of some of these things, at least as a minimum, to incorporate into the operational plan so that you can run from Montana to Florida and expect a certain level of interoperability of information necessary for mutual aid or whatever.

MR. BUCHANAN: Yeah. And --

MR. SCHLIEMAN: That's true.

MR. BUCHANAN: I don't disagree with that, that's true. I'm not sure it's this group that does that. There is other groups.

MR. BEEFERMAN: Oh, okay.

MR. BUCHANAN: There's, you know, the fire community put together ICS, which is their standard for managing fires. They could very well extend that and do a lot of the things you are saying.

The police community has their stuff --

MR. BEEFERMAN: But truly you don't have an interoperable radio. We have a radio that meets an error standard, but you don't have interoperability.

MR. BUCHANAN: You have interoperability in that agency A's radio can receive the packets from agency B's radio.

MR. BEEFERMAN: That's right, but let's be practical. Like somebody said before, the guys in the field don't want to know about the bits and the bawds. They want to take their radio from here, go to there, and communicate with somebody else.

MR. BUCHANAN: Dave, I think what we've --

MR. BEEFERMAN: If you tell them they have a compatible radio, data interoperability radio, but they can't talk in terms of the application, they don't have interoperability.

MR. WELLS: Well, using the computer as analogy. We have taken for granted the fact that you can take your PC from New York all the way to California, plug it into a 110-volt jack, plug it into a phone line, work up your Word document, go through your e-mail and send it over that phone line to get it back to the other side of the country. But what you've taken for granted is that there is a standard pipeline, the telephone line, the cell phone line that Bob is using right here. That computer doesn't care if you are using a twisted pair or an RF model or a hand-held device --

MR. BUCHANAN: That's what I'm getting at.

MR. WELLS: -- fact that it communicates.

MR. BUCHANAN: What we are trying to do is formulate the standard that moves the packets.

MR. WELLS: Mm-hmm.

MR. BUCHANAN: Not what the packets are consisting of. Now, that may need to be done. I won't argue with Steve on that. But I don't think at this level right here what we're considering is is we're trying to move the packets. We are not trying to specify to the users what those packets are.

MR. WELLS: So understanding from the users what those packets will be, will they be text, video, fax, will it be fire law, EMS, what are the different requirements that they have.

MR. BUCHANAN: Right. You need to know -- how they standardize amongst themselves on it, I think, it's going to have to be up to them.

MR. WELLS: Well, yeah.

MR. BUCHANAN: We've got to move the packets from A to B for them.

MR. WELLS: And what's the size of those packets and see if they want that.

MR. BUCHANAN: And what's the size of the packets, and that's what I tried to put in here. In fact, 12 really gets to that, to a large extent, you know, as far as how fast they get their over the air.

But anyway, go ahead. But I think -- was there someone ahead of you, Wayne?

MR. LELAND: Yeah, Richard. I volunteered but he said he's so comfortable he doesn't want to get up anymore.

MR. BUCHANAN: You don't want to get up anymore?

MR. SCHLIEMAN: You get tired of standing.

THE AUDIENCE: Keep it rolling.

MR. BUCHANAN: Okay, go ahead, Wayne.

MR. LELAND: I just wanted to make a couple of comments. I think Carlton hit on what I think is some of the key here.

It's really what are the user requirements. Remember TIA has agreed, and by the way I'm from Motorola, but I also chair the private radio section of TIA. TIA has agreed to work on the wideband data standard, okay?

What the manufacturers within TIA need is a definition of the user needs and requirements and applications and things that they intend to use, as well as what are the constraints. And the constraints are the FCC rules which are still kind of up in the air because they are out, yet there are petitions for reconsideration. I've raised this before. We've got to get that behind us and then we can move forward.

But to Bob's point of 150 kilohertz wide channel, I don't -- don't you guys try and make that decision. Tell the TIA people and the manufacturers what you want. Say, hey, we'd like the ability to use the maximum under these conditions, but have these fallbacks, okay?

And I think his analogy about a self-adjusting modem is perfectly adequate. You can use a narrow band channel to feed back, you know, at the fixed end if

you are transmitting from the mobile, or vice-versa to say the signal is coming in kind of lousy, slow it down. Okay? Or broaden the bandwidth. There is all kinds of things.

If we give the engineers the challenge and tell them -- I mean, here is what they really want to do, let's let them go be inventive and creative for awhile.

So I just get concerned that you guys are digging too much into the real technical and says, well, what should the word size be and what should the bit rate be and all of that kind of that kind of stuff. Yes, that will be constrained, but at this point in time I think we need a little bit more of here is how we are going to use it and here is what we would like to be able to do with it, okay, both in the applications and speeds, et cetera.

So just those comments.

MR. BUCHANAN: Well, based on that, how would you want us to change what I've written up?

MR. LELAND: Now you're making me go read it again.

MR. BUCHANAN: Yeah. I mean, I need some help, gang. I sent this out on the internet and I got absolutely no feedback, so what you've got here is now we are discussing it here, but we need some more --

MR. LELAND: Well, let me -- all right, let me give you one example --

MR. BUCHANAN: Yeah.

MR. LELAND: -- on the bandwidth where you say 50, 100, 150, should we have all three or not, why don't you pose it in the following way that says we do not want to pay a cost penalty for variable bandwidth. So if the standard, if the manufacturer is going to come up and say there is no cost penalty or there is a very, very insignificant cost penalty, then we would like variable multiple bandwidths ranging from -- you know,

to cover this application, not the bits, don't tell us from 28 bits per second to, you know, four megabits per second. Tell us from slow speed text, you know, just beyond what's covered in narrow band data channels, up to this level.

Another general comment I would make is if you go back -- it's a related subject, but if you go back to the HSWAC report and the requirements for public safety spectrum, there was a requirement that came out of that for an additional, I believe it was 97.5 megahertz.

MR. BUCHANAN: Yeah.

MR. LELAND: Two and a half megahertz interoperability, 95 other, and most of it was data applications.

What we are talking about here is part of 24 megahertz. There is still a need for more spectrum for public safety for wideband data application. So as we get into these ultra high, you know, that says, gee, we really want live video and your demo shows that you can do some things but not others, we have to be careful about trying to cram that all into here and separate out that part that we can't cram into here and say, yeah, that's why we need more, okay?

And there is a docket out. I don't want status it is. I think comments are due on this 4.9 gigahertz. There is 50 megahertz there.

MR. SCHLIEMAN: Oh, the one that says we don't need anymore?

MR. LELAND: Right.

MR. BUCHANAN: Yeah, the one that says --

MR. LELAND: Right, that one.

So, you know, it is a complex issue. So in that case, the case of what should the channel width be, well, first of all, we, the manufacturers, want to know from the FCC finally what is the channel width. You say it's 150 but there are petitions for reconsideration, please deal with them, okay, and tell us what we can work with. So those are constraints. And then we need from you, okay, here are the applications that we want and the dynamics of the application.

In other words -- and the prioritization. I think I mentioned that before. If you come up with a list of "want tos," and we all do, we need some priority that says which ones are most important and which are trade-offs. So I think that's where to focus.

So in the case of the channel width say we want it to the maximum that the FCC allows, that's one way of doing it right now, and we want it to be variable bandwidth if that does not raise a cost penalty or if the cost is relatively insignificant of being able to do that and those trade-offs. So that would be one way of doing it.

MR. BUCHANAN: Okay, that helps. Why don't we try to go down that road a little bit, and Dick, go ahead, and we'll see --

MR. DEMELLO: First of all, it's really scary. I'm starting to agree with a whole bunch of you guys.

(Laughter.)

MR. BUCHANAN: Please note this down.

MR. DEMELLO: The other thing is I think Carlton's approach is really great, and I think that TIA input was great too. Good way to approach it.

Just one thing I wanted to pass on. I've gone through a procurement of some half T-1 radios, 200 kilohertz. Just awhile ago they were 384. I mean, technology

is moving so fast it's unbelievable, so we really may not want to tie ourselves to a kilohertz bandwidth. We may want to look at real needs, identify those needs as was brought up.

MR. BUCHANAN: Yeah, I -- you are right. I did both actually. I think there is examples in here, and maybe they are not all the right examples, but there are user needs that come out of this starting at paragraph nine and working up. And maybe from that we can change this to the rest of it.

I'm not sure, but we've got to come up with something. If we can't get it settled today, which we probably won't at this point, then we need to -- we need to revise the document and we need to get feedback in between meetings between now and September so that we have something that everyone can live with, but that means that you guys have got to put input back when it gets sent out on the internet. Waiting until September again to do this is not going to work. We'll just be delaying some more.

But if we could get -- if we could get some more input today on what I haven't put in here for user needs or what needs to be changed, then let's do that and then we can try to write it up and get closer to a consensus.

Go ahead, Ron.

MR. HARASETH: Ron Haraseth, APCO.

Just wanted to touch a little bit back on the OSI model that Carlton was talking about, and I think it would probably be really critical to use it almost as your ICS model for developing what your needs and your uses here. The lower levels of that are -- start with the physical layer, which is essentially the RF and the modulation, and above

that is the protocol that travels upon that, and then of course you get up to the upper end and you have the actual applications.

And I think it's really important that we understand those and how they interrelate, and also try to address which of those drive the others.

It's probably very true that we need to start in the middle and look elsewhere perhaps. The upper end on the applications, I want to add that NIJ has -- there is another faction out there besides the group that Tom Toleman is working with out here that is working on justice integration, and they are looking at integrating the applications that Steve was talking about at the user end so that what you are transmitting to the judge is in the same format that can go all the way back. Well, essentially integrate the applications so they are understandable all the way from the dispatch center all the way out through the court systems, even to the lawyers and the probation officers. But there is an effort that's doing that. We need to be aware of that. They need to be aware of what we are doing also.

MR. BUCHANAN: Yeah, I think that's right, and I think that's why I was saying too that I'm not sure that that high end that Steve is talking about, which is important, and Norm said it too, but I'm not sure that that's the effort where this group --

MR. HARASETH: Well, that's where the --

MR. BUCHANAN: -- particularly this work group should be going at. We're trying to --

MR. HARASETH: This is where some of those middle protocols probably come into play because those actually do, they compartmentalize those things, and there are standards out there already that take that into consideration.

Yes, the applications need to be standardized, but the transmission of those applications in the middle OSI layers are pretty well standardized right now.

MR. BUCHANAN: Yeah.

MR. HARASETH: And we probably need to be rather open when it comes to the transmission layers at the bottom, the physical layer itself, and do exactly like --

THE AUDIENCE: Wayne.

MR. BUCHANAN: Wayne.

MR. HARASETH: My mind's going blank here. Spoke to of giving the generalizations. I mean, this is our cookbook here, you know. If we can have something as dynamically sliding and use the modem dial-up model and let the engineers have their way and tell them, okay, we need a physical layer over an RF link that will match the standard middle OSI layers. You can have up to 150 kilohertz bandwidth with play with and it can be variable, depending upon the environment that it's operating in, and it can be dynamic. Those are the criteria that we should probably be feeding to the TIA group and let the engineers go with that.

But just -- you know, if that helps compartmentalize what you're doing, the OSI model is probably a good place to start with and learn from that. It is a good way and a good -- if you are used to -- to put it in an analogy -- the ICS format, the OSI model does that. It compartmentalizes and gives common terminology for the different components, the overall picture.

MR. BUCHANAN: Yeah.

MR. HARASETH: It's similar.

MR. BUCHANAN: But then we don't need to specify to them that maybe we need -- that we're going to have mobile repeaters or that we want car-to-car applications? That's not covered by the OSI model.

MR. HARASETH: No, it isn't, but it's a wish list for the physical layer.

MR. BUCHANAN: Well, okay. That's what I'm getting at.

We probably have covered it and I could change this to the OSI, but have I covered everything? Do we want car-to-car operation? That's maybe a good -- maybe a way to start it is can everyone agree that we want car-to-car operation direct, not through a repeater?

MR. HARASETH: I think what everybody is talking about that's okay, and you've got that in there in your users' needs.

MR. BUCHANAN: Uh-huh.

MR. HARASETH: But maybe we are going too far when we are putting definite limitations on packet and then speed of service as well.

MR. BUCHANAN: Then we just want to take that -- we don't want to tell them what kind of speed of service we need then?

MR. HARASETH: No, tell them the ranges that we can live with perhaps and let them tell us exactly what they have.

MR. BUCHANAN: Okay. Some of the other issues that came up, well, range, overall range then, just here's the range, from zero to so many miles.

MR. HARASETH: And if they can come up with something that has a sliding scale on that, and it may not even be reciprocal. This may be a perfect situation where you have 100 watt mobile or a 50 watt mobile that is sending the up link at 50

kilohertz, but it's receiving high speed from a higher power base station at 150 kilohertz. If that's very possible, it should be done.

They are doing that right now with the internet through cable connections.

MR. BUCHANAN: Oh, yeah.

MR. HARASETH: And dial-up and return links.

MR. BUCHANAN: Right, asymmetrical.

MR. HARASETH: Asymmetrical.

MR. SCHLIEMAN: Higher power? Will we disturb our narrow band channels if we do that? If we put 10 times the power on the down link channel, will we spill out and cause problems for land/mobile communication systems, the voice systems?

THE AUDIENCE: We can put it on the center of the channel, and you can spread it out.

MR. SCHLIEMAN: Doesn't it generally? Doesn't it generally spread out, 150 kilohertz wide?

MR. BUCHANAN: In the end we will do whatever all those engineers that you guys chain back in the labs come up with.

THE AUDIENCE: That's right.

MR. BUCHANAN: Yes, go ahead.

MR. SPEIDEL: This is Bob Speidel with Com-net Ericsson.

I didn't want to let this opportunity to pass because I think for the third time today we are going to say that we agree 100 percent with what Wayne was saying.

(Laughter.)

MR. SCHLIEMAN: Smacks of collusion.

MR. BUCHANAN: Yeah.

THE AUDIENCE: -- plane and call later.

(Laughter.)

MR. BUCHANAN: Thank you. We were worried.

MR. SPEIDEL: But I really think that, you know, looking at it, telling TIA what you want from a functional standpoint with the ranges of what is acceptable, what is not is probably the best way to go.

I also wanted to point out, I was talking with Paul May just yesterday, the TIA meetings are coming up next week. And if you recall in the April meeting, Paul stood here, you know, and he was explaining the process and how TIA really responds to proposals that are made by one ore more of the manufacturers, you know, and that's what they forward with, with their standardization.

Even though the meetings are, you know, a week after next, we still have not gotten anything yet or he has not received anything yet as far as proposals of where to go on the wideband data, and maybe this is part of the reason, because we don't really know what it is you wanted to do, and let us worry -- or as Wayne said, let the engineers who are going to sit in the back room that we chain there, you know, figure out how we're going to implement this and tell you what is possible, what is not possible, or you know, the degree that it would be done.

So I really think that, you know, if you tell TIA what it is you want to do from like a functional sense, operational sense, whatever, that would probably get this thing moving.

MR. BUCHANAN: Okay, and that's what we are trying to do.

I'll tell you what, based on all that, turn to the last page, paragraph 13, which is the summary of the key -- this is basically -- all the other discussion boils down to this, and let's just go down them one at a time and you guys tell me which ones are features that should or shouldn't be in there, and if there should be others.

The first one is there must be an infrastructure independent broadcast mode for direct unit-to-unit data transfer. And I put "primarily video".

MR. WELLS: Now, you have unit to units, potentially unit to multiple units.

MR. BUCHANAN: Well, yes, and that's the yes there at the -- yeah.

MR. SCHLIEMAN: That's why the broadcast mode.

MR. BUCHANAN: Yeah. I think that's something they need to know, that it's a broadcast mode. It doesn't just go from a single unit to another single unit.

MR. KEARNS: Might it be good there to say "over some distance"?

MR. BUCHANAN: We could add that, yes.

MR. KEARNS: So that we give them a --

MR. WILHELM: Speak into the microphone, please.

MR. BUCHANAN: Yeah, you need to, and identify yourself.

MR. KEARNS: Kevin Kearns, Washington State.

It might be good there on 13 then to say that this would be operating over a certain area, whether we do it in distance between transmitters is probably the best way to do it because again that sounds like as parameter they will need from a design standpoint.

MR. BUCHANAN: Okay.

MR. KEARNS: And we would probably want to say whether or not that should be stationary units or units that are moving, and if they are moving, at what speed, because again that will influence the technology.

MR. BUCHANAN: Go ahead, Glen.

MR. NASH: Dave, Glen Nash.

I would recommend rather than hiding the fact that we are thinking about multiple units put an "s" at the end of one of the words, that we might want to say, you know, unit two, single and/or multiple units.

MR. BUCHANAN: Okay.

MR. NASH: Just be, you know, more definitive in that so that somebody just doesn't read over it.

MR. BUCHANAN: Okay. Let me -- okay, then the other suggestion was the range, I put up to 10 miles. Now that was assuming helicopter operations. Well, actually -- yeah, that was assuming 10 miles maximum and that was assuming a helicopter. Obviously, I don't think we're going to get quite that much.

MR. WELLS: Land/mobile.

MR. BUCHANAN: Land/mobile. But if someone has some ideas for the range, we could use that.

Yeah, Norm?

MR. COLTRI: Norm Coltri, RCC Consultants beating a dead horse again.

How are you going to prohibit the local TV station from picking up that video signal and rebroadcasting it on the local news station?

MR. BUCHANAN: I'm not necessarily going to do that unless I encrypt it.

MR. COLTRI: And if you encrypt it, then how are you going to distribute the key to mobile units that are entering the area that are not normally under your control? The interoperable units that come into the area, how are you going to distribute the key to them?

MR. BUCHANAN: Well, how are we --

MR. COLTRI: How are you going to know who they are --

MR. BUCHANAN: Norm, how are we doing that on the -- where we set encryption for voice was optional, and how are we doing that for that?

MR. SCHLIEMAN: Over the air rekeying.

MR. COLTRI: I don't know.

MR. BUCHANAN: I don't either. We're not.

MR. COLTRI: That's what this committee has to address.

MR. SCHLIEMAN: Over the air rekeying.

MR. BUCHANAN: Over the air rekeying, I think.

MR. COLTRI: As long as you know who you are talking to, and you have to identify the unit. You have to verify who that unit -- are you going to have ESNs built into the radio and a nationwide database of ESNs so that you know who you are communicating with?

I don't know that. I'm asking the question. And I think it's something that the interoperability committee has to address, and it has to address it up front.

MR. BUCHANAN: Well, if we have to address it, we have to figure out some way to address it and I'm not sure how we write the standard for TIA to address all that.

Do we need to address all that, Wayne, or are you guys going to come up with that?

MR. LELAND: Wayne Leland again, Motorola and TIA.

A couple of comments. I agree with Norm. I think there is a parallel path here. There is two things. I mean, do you want to prevent the broadcast guys from picking up your -- I mean, you use them now because they are the only guys that have the spectrum for the helicopters.

MR. BUCHANAN: They can fly around and --

MR. LELAND: Right.

MR. BUCHANAN: -- do whatever they want anyway. So no, I could care less.

MR. LELAND: Well, but that's a valid question.

MR. BUCHANAN: Yeah.

MR. LELAND: Plus this issue of the compatibility and how do you register and all that stuff, yes, I think that's a key part of what's going on here. But also, in parallel and maybe to get TIA started, we need this other information.

You don't have to have all of the answers. I mean, let's not come up with unit to unit is -- you know, we'll compromise and we have four votes for ten and three votes for eight, and we'll come up with 8.33, okay?

Ask us. Come back and say, you know, we would like the range to be ten miles but you tell us what are the trade-offs and constraints and stuff. We absolutely need it on site within a radius of a quarter mile, okay, at disaster scenes, and we would like it up to ten miles but you, TIA, tell us what are the trade-offs and what are the break points, for example. I mean, and this can be iterative process.

And I think you can do that in a lot of parameters. You don't have to -- I mean, what we need to know is the fact that you want -- that you consider unit to unit direct mode, real time video important. I mean, that's pretty significant in itself, okay?

And once the engineers start working on that, then they will come up with, okay, here is the trade-offs. For example, you need to do 180 watts to get 10 miles and that, you know, falls -- it's too high a power for the frequency we're using, all of those kinds of things, and we can do that.

MR. BUCHANAN: Well, if we just leave it like it is, change it to multiple units to clarify that, and not even specify a range? You come back and tell us --

MR. LELAND: No, I would -- I would specifically ask the technical question of TIA. Please consider, you know, under -- you know, what are the -- what are the limiting factors, cost and performance-wise, et cetera, for high -- you know, relating to distance of transmission, mobility, you know, that Steve rose, whether you're in -- the unit is moving or stationary, et cetera.

MR. WELLS: In that statement number 13 with "up to 10 miles in motion or stationary."

MR. SCHLIEMAN: How about "up to 10 miles to an airborne mobile and not less than a quarter of a mile for mobile and portable operations"? I think that was the direction --

MR. LELAND: That would work but I wouldn't limit it to that.

MR. SCHLIEMAN: You mentioned cost. I didn't know TIA could address cost issues.

MR. LELAND: Well, we can't address pricing and how we're going to price things. I mean, we can say -- I don't think there is an antitrust issue in saying you guys are nuts, that's impossible. Okay? So we can say those kinds of things.

I mean, say you change the word "cost" to "practical," okay?

MR. BUCHANAN: Okay.

MR. LELAND: And we'll deal with it that way.

MR. SCHLIEMAN: Or cost effective?

MR. LELAND: Cost effective, practical, right.

MR. BUCHANAN: Okay. So what I'm getting out of that, without trying to -- I think I'm going to have to go back and really read it is, is we need to ask the question then what are the factors that's going to impact the range of performance and then also tell you that we need it within a quarter --

MR. LELAND: If you could -- yeah, if you could --

MR. BUCHANAN: -- or three-quarters of a mile --

MR. LELAND: -- come up with some absolute minimum.s

MR. BUCHANAN: Minimums.

MR. LELAND: Because we absolutely need this but we would like it beyond that. Please help us understand what the trade-offs are.

MR. BUCHANAN: What the trade-offs are and what we get and --

MR. LELAND: Right.

MR. BUCHANAN: Okay.

MR. LELAND: I think that would be valid in all of these. I mean, some areas you have -- you clearly -- you guys know what you want definitely, and in other areas -- I mean, we are both exploring new frontiers here and --

MR. BUCHANAN: I think that's part of the problem.

MR. LELAND: Yeah.

MR. BUCHANAN: Yeah.

MR. LELAND: So it's got to be iterative, and if you can give us, you know, whoever mentioned it earlier mentioned a range, I think that's good and that would be the mobility and the distance. You know, you ask, you say I need this kind of thing, I want -- and I want ten miles from, you know, line of sight to a helicopter, quarter mile on site, but please tell us what the trade-offs are on -- you know, beyond those minimums because a lot of the people that attend these meetings also attend the TIA meetings, so, you know, it's the same, we can have the same guy up there.

MR. BUCHANAN: Okay. Fourteen is temporary networks using temporary repeaters are required, and included in that I said a mobile which is acting as a control station would act as a server for message passing using IP protocols.

Now, maybe I shouldn't put IP, but it seems to me that's pretty much -- we're going to eventually have to deal with IPs, and the qualifying statement that this may require external equipment and other links to interface to the internet.

MR. WELLS: Dave, you used two terms here, repeater and control station. Do you mean them to act one and the same?

MR. BUCHANAN: No. I mean, if you have -- if you put a repeater, a temporary repeater in just as in voice, well, it's going to -- more than likely this is looking at some place where you don't have infrastructure to cover what you're doing, so what I was looking at is the repeater would simply be your range extender. The data has to come from some place or that something has to act as a server unless it's strictly that you're going to just pass messages from mobile to mobile such as e-mail.

MR. WELLS: So you have a mobile to a NETB2T to an FX-1 connected to the internet?

MR. BUCHANAN: Yeah. You could do -- right, and that wouldn't stop you also from mobile to mobile, direct mobile to mobile data for e-mail and things like that.

Anyway, is there a comment no that requirement? Is that a valid one? Is that something that I'm off base?

It seems to me in California we absolutely need that to work on our fires. That's why I put it in there.

MR. SCHLIEMAN: Well, in conjunction with that one and 17, 17, you're discounting the fact that the current electronic news gathering practice with cameras, video cameras is to have a transmitter link on the back of it.

Wouldn't it be practical to do the same thing on these frequencies?

I'm not sure you want 17. I think maybe what you want is a statement that says we'd like to implement this in fixed mobile, portable and repeater -- fixed and portable repeater applications.

MR. BUCHANAN: Well, 17 was addressing whether or not you could have a hand-held data unit?

MR. SCHLIEMAN: Why not?

MR. BUCHANAN: I don't know. Right now --

MR. SCHLIEMAN: If I spent the money, I could have that on my Pom Pilot now. Why wouldn't I want to have it with what we are building here? Why should the technology be less than what you use commercially now?

MR. BUCHANAN: Well, how long does your Pom Pilot last you out in the field --

MR. SCHLIEMAN: Well --

MR. BUCHANAN: -- transmitting data back and forth?

MR. SCHLIEMAN: Yes, admittedly there is an issue of battery capacity, but why are you suggesting --

MR. BUCHANAN: You're saying don't limit it?

MR. SCHLIEMAN: Yeah, let's let them tell us what it will be.

MR. BUCHANAN: Tell us what the parameters --

MR. SCHLIEMAN: Yeah, what are the trade-offs.

MR. BUCHANAN: What are the trade-offs to implement hand-held?

MR. SCHLIEMAN: Right, that's the way Wayne put it, what are the trade-offs.

MR. BUCHANAN: Okay, we'll change that one.

MR. SCHLIEMAN: Yeah, cause basically we want to be able to do anything and so tell us what the limits are.

MR. BUCHANAN: All right.

MR. WELLS: In a disaster, if I'm in a rapid impact assessment team and I'm dropping into a damaged area, I may have nothing but a hand-held unit and a digital camera, snap a shot of the damage, put it over the air through my hand-held unit if there is an infrastructure.

THE AUDIENCE: It may be a back held unit, but that's okay.

MR. WELLS: Yeah, back held, you know, 20-pound battery back here with a two ounce modem sitting here. At least it's portable to the point that it's carried.

MR. BUCHANAN: Well, how do we want to word that then? Help me out with the wording. Do we just want to make it strictly a question to them?

MR. WELLS: Instead of "hand-held," why not just call it portable and let the portable be whatever size you come up with.

MR. LELAND: I keep interrupting. Why don't you say hand-held or battery powered --

MR. BUCHANAN: Wayne, Wayne, I'm sorry. But can you come to the microphone please so that we can get this on the record?

MR. BUCHANAN: I'm glad you guys are interrupting each other now. Maybe we can get the fights going again.

(Laughter.)

MR. LELAND: Like I say, why don't you just say hand-held or -- hand-held battery powered units are desirable?

MR. BUCHANAN: Okay.

MR. LELAND: Okay. And then NCC requests TIA to tell us of the trade-offs. Time trade-offs, practicality, you know, those kinds of parameters because I agree with Bob. I mean, don't write it off. You never know. I mean, sometimes I used to give the engineers, I'd say a really stupid thing, it's impossible to do, and guess what, one of them would figure out how to do it.

MR. SCHLIEMAN: By tomorrow.

MR. LELAND: Well, not always but sometimes.

MR. SCHLIEMAN: That was trade-offs and time to develop, right? Okay.

MR. BUCHANAN: Trade-offs and performance and time to develop.

Yeah, go ahead.

MR. HOFMEISTER: Ernie Hofmeister, Com-net Ericsson.

I think most of my comments have been overcome by the recent discussion. But have you finished 16 or have you skipped over that?

MR. BUCHANAN: We've skipped over it for a second.

MR. HOFMEISTER: Okay.

MR. BUCHANAN: So go ahead on it.

MR. HOFMEISTER: Well, I guess my question would be, in line with what we have been talking about here I wonder whether it's appropriate to specify the bit

rate that you want, try to specify what the driving application is, and something about it's an application and you want to do it in a certain time with a certain quality, and let the engineers at TIA figure out what the bit rate needs to be to support that.

MR. BUCHANAN: Yeah, I can go along with that to a certain extent except for I'm not quite sure I know -- what I would rather find out is -- the reason I put that in there that's consistent with what we did at the narrow band data. But --

MR. SCHLIEMAN: Perhaps would it be better to suggest that we specify that we want the performance characteristics to be optimum for a minimum bit error rate -- let's see -- maximum bit error rate of one times ten to the minus sixth.

MR. BUCHANAN: -- minus sixth.

MR. SCHLIEMAN: And then you can tell us what we'll get out of it and what the system gain will be, that is, transmitter power, receiver sensitivity to achieve those.

MR. LELAND: Again, you're getting into the designing of the product. Why don't you say -- you know, I mean, that's maybe what it comes out to be, but what do you care --

MR. BUCHANAN: Well --

MR. LELAND: -- as a user whether it's one time ten to the minus sixth or 1.2 times to the minus sixth, as long as you get the information to you reliably, consistently in a timely manner, et cetera?

MR. SCHLIEMAN: I guess it depends on what the information is.

MR. LELAND: I'd say take off our engineer's hat for this meeting and put on our -- the cop on the street hat or the guy at the scene.

MR. BUCHANAN: Even the copy on the street, although he doesn't get into this, if he sends data from point A to point B, he wants to be assured that it gets there error free. It doesn't do him any good to have errors introduced into it.

MR. LELAND: But maybe I don't need -- I don't know, but maybe I don't need one times ten to the minus sixth for video, maybe two times ten to the minus sixth is okay. I'm just saying don't limit it.

MR. BUCHANAN: Okay.

MR. LELAND: Do it something that says -- that says --

MR. BUCHANAN: I guess we want --

MR. LELAND: -- maximize the data throughput --

MR. BUCHANAN: Throughput.

MR. LELAND: -- through state of the art, you know, error correction techniques consistent with public safety mission critical applications. How's that?

MR. BUCHANAN: That's great.

THE AUDIENCE: Say it again while he types it.

MR. BUCHANAN: That's great because --

MR. SCHLIEMAN: We're recording this.

MR. BUCHANAN: Because at some point we do need to know what the actual throughput is.

MR. LELAND: Of course.

MR. BUCHANAN: Because then we can tell the users, hey, well, you want to put that down the pipe, it's okay, but it's going to take you ten minutes before you get it through.

MR. LELAND: Of course. Of course.

MR. BUCHANAN: And nothing else is going to go, you know, that type of thing.

MR. SCHLIEMAN: Yeah.

MR. LELAND: But again, my only point is here is we're at the beginning. And as Bob Speidel pointed out or Ernie, that there haven't been any submissions. Nobody has got any vested interest in here which when I put my TIA hat on I say, boy, this is good. We shouldn't have, you know, wars over this because everybody is starting with a clean sheet of paper. Nobody has got a favorite son to put forward.

On the other hand, there is not something for us to get our arms around, which is where we are trying to get. But at that stage let's keep it more open so that we at least for a month or two get the engineers to be creative, and do all the "what ifs, okay, and then we can look at those and throw out the really oddball ones that are never going to work and bring it back to reality and start moving forward.

But a lot of this is going to be trade-offs because as I said before, they are new frontiers for both of us in terms of the applications, and I guarantee, whatever we come up with for applications and we get the product out there the guys in the field will start using it in very creative different ways than we ever envisioned. So we need not constrain ourselves with trying to get all of those applications, but get the key ones, as you are doing, and start out with the parameters.

You say, you know, we need to know back from you, TIA, what are the ranges. You know, here is what we want. Is that consistent and what are the trade-offs and ranges? And get that dialogue going, and then we can narrow in on both the

technical and the applications at the same time and that's the only way I think we'll get this thing moving.

MR. BUCHANAN: Sounds good to me.

Okay, we have -- do you want to read what we ended up with on 16 in place of what was there?

MR. SCHLIEMAN: I just put "Maximize data throughput using the state of the art error correction techniques and advise what performance can be expected."

MR. BUCHANAN: Okay.

THE AUDIENCE: For mission critical public safety.

MR. SCHLIEMAN: For mission critical public safety.

MR. BUCHANAN: Is there any problem with 15, fixed infrastructure with internet connection is required. That one's pretty straightforward.

MR. WELLS: That's pretty much a mobile in the field, a portable to a base station --

MR. BUCHANAN: Yeah.

MR. WELLS: -- to get to the internet.

MR. BUCHANAN: That's just saying that we want to have the ability to put in a fixed infrastructure.

Ron?

MR. HARASETH: Ron Haraseth.

A little comment that it includes that but it goes all the way back up to 13. You're talking about video but we are also talking about internet, and most of the applications we're probably talking about IP-based applications.

But when it comes to video, do we want to restrict it to IP-based packetized video or do we want direct broadcast video for the true video?

MR. BUCHANAN: Well, you can't get direct -- you are going to have a compressed video on the size of channels. I mean, even if we said take all the bandwidth we've got, make one channel out of it, you're still going to end up with compressed video.

So what I am saying is, I guess, is that if --

MR. HARASETH: So video over IP.

MR. BUCHANAN: Yeah.

MR. HARASETH: One way or the other.

Just as long as that's clear when it goes to the engineers.

MR. BUCHANAN: Right.

MR. HARASETH: So they are not designing a --

MR. BUCHANAN: I mean, IP is out there.

MR. HARASETH: Right.

MR. BUCHANAN: And it solves a lot of problems in getting from the field back to wherever it may be, that may be a state away in the case of some fire operations. You may be sending some of this stuff way -- you know.

MR. HARASETH: It solves one of your interoperability requirements in your OIS model.

MR. BUCHANAN: Yeah, right.

I think the next thing we need to do is -- we've got through these. Norm, I need to get you back up here because you brought up encryption. We need to discuss that

a little bit, what kind of requirement, since you brought it up I'll put you on the spot and let you tell me what you think the requirement ought to be.

MR. WELLS: In fact, I wrote it down as item 18 already.

MR. BUCHANAN: Yeah, it will become 18.

MR. COLTRI: Norm Coltri, RCC Consultants.

Again, we are putting a lot of data over frequencies that are going to be public knowledge, that are going to be available for anyone to set up a receiver to listen to, and it's a question of how much of this information is sensitive enough that you don't want someone other than the person who is intended to, to receive it. That's a question that the public safety community has to answer.

And if the answer is all of it, well, then all of it has to be encrypted, obviously. If it's only some of it, then some of it has to be encrypted.

My example before is on the broadcast of video, do you want the local TV station to pick up that video and rebroadcast it over the air. Well, I guess it depends on what the video is. If it's a surveillance operation, no, yo don't want the mobster to turn on his TV and see a picture of his house. You really don't want to see that.

MR. BUCHANAN: Yeah. Although I can tell you that's one issue the face now in the L.A. area where they are doing a lot of airborne video. They are doing it essentially on the same frequencies that the broadcasters put their stuff and any of the broadcasters can generally pick up that signal, sometimes through accident, sometimes if they want it purposely.

How about if we went -- what would you think about just doing it the same way we handled the voice interoperability, which was it should be -- encryption should be a standard option, and --

MR. COLTRI: Encryption works very well on your general use channels where you have control of your network and you have control of your mobile units. When you try to swing encryption over to the interoperability channels, you then bring up the big question is how do you handle vehicles that are traveling into your area from outside of the area, and that's something that I don't know if it's been addressed yet.

MR. BUCHANAN: It hasn't from the actual user need. What we handled it by -- for the voice interoperability is, is we simply stated that encryption was a standard option. It wasn't mandatory. But if it was going to be there, it had to be in a standardized manner, which is our discussions that we were having this morning over triple DES or advanced encryption or regular DES or what ever it might be.

So would that work here also to give us an option of encryption because I think you brought up a good point, that some of it probably will be need to be encrypted?

MR. COLTRI: The difficult, again, and you're going to have the same difficulty with the voice end of it is how do you know who you're talking to. How do you know that you're actually talking to Bob Schlieman in New York State Police car 104 if he happens to be traveling through your area in California. How do you know that that's really Bob in the car? And that's not someone who has cloned his radio or someone that is trying to hack into the system. I don't know how you handle that.

MR. BUCHANAN: Okay. Glen, maybe.

MR. NASH: Glen Nash.

And I think the way that is handled is that most of those situations are task force type situations or other things where you are bringing a group of people together for a purpose, and that group now becomes the operating group. And even though they have their own radios, they can establish within their group what the appropriate encryption key is going to be or the protocols or that.

But if they don't have the capability of encrypting, then they don't have the ability then to establish that process within their group, you know.

So what we need to do is give them the capability of doing it and then let them work out the process within the operating group as it's needed.

MR. WELLS: Have a question. In the analogue voice world, how do you authenticate that car 54 is indeed car 54 coming into their area? You take their word for it or is there some preregistration before they actually show up that you expect them to be there?

MR. SCHLIEMAN: We used to have that call sign. H54.

MR. WELLS: So how do you know if H54 is authenticated to be Bob Schlieman or some John Doe on the street that just happened to pick that identity in the old work, old analog voice, how did you do that before?

MR. NASH: The problem -- you are focusing on the concern of roamers coming in, and how do you authenticate a roamer. That's not the issue here. The issue is you've got this group that you've brought together. It's no longer really a group of roamers that you are trying to authenticate.

MR. WELLS: Right.

MR. NASH: It is a working group of people who you've already authenticated and you are trying to get them to work together on this interoperability channel.

MR. WELLS: So expecting them you can already enter them into your database as recognized people and give them the key.

MR. NASH: That's right. They are known people who you are bringing in and we're creating the capability for that to happen on the interoperability channels.

MR. BUCHANAN: Given that --

MR. NASH: It's not just random roamers.

MR. BUCHANAN: Given that, Glen, then if we just say encryption is required as a standard option, I would assume that that would handle the problem and we wouldn't have to go any farther with -- somebody -- we're going to have to pick -- we're having the same problem with voice -- picking which encryption standard.

MR. MCEWEN: Well, it goes back to some things I said earlier in the meeting, and it has to do with the fact that we are bringing together what had been traditional data people that hadn't been in the wireless mode and wireless people, and they have got to come together.

Now, what is happening in -- in the criminal justice arena is a very special part of the public safety arena. I mean, really they are being driven by the national criminal justice system, such as the NCIC-2000, AFIS and all of these kinds of systems, and those are driven by the users.

Most of those users are not wireless people. They are IT people. They are people that run data systems, traditionally wire systems, and they are establishing security requirements, national standards that are going to drive you in this arena.

So what I would suggest is week after next the FBI Advisory Policy Board is meeting in Portland, and they will be adopting the second edition of the national standards for those systems, and those are not being written by the FBI. They are being driven by the local and state users.

So what I will offer to do, I just -- I'm just not an expert in this area, but I've been following it some, is to share with you those standards and what you will need to do is to get people that are in the data radio business to take a look at those and help us see where they apply and what we need to do to apply them to what you are trying to do.

So the encryption part of I can't give you a good answer on what to say other than maybe what you are saying there for today.

MR. BUCHANAN: Yeah, I think -- well, you know, another issue on data that's different than voice, you can encrypt it at two different points. You can encrypt the data as it goes out over the air or you can encrypt at the application layer before you send it over the air, or both. Yeah, you could have it doubly encrypted.

MR. MCEWEN: All these systems are going to have to be authenticated. Now, they are not dealing with voice.

MR. BUCHANAN: No, I --

MR. MCEWEN: They are not dealing with voice at this point. I mean, what you are talking about, Carlton, they are not even thinking about. They are not thinking about how do you -- how are you sure that it's Carlton talking. They are talking

about data, pure data as opposed to voice, and all of those are going to have to be authenticated. And the standards basically are moving towards you buy one new piece of equipment, one new piece of software, you change anything in your system, you're going to have to now be in conformance with these standards. And little by little over a period of years everybody is going to be on the same sheet of music, and that's kind of the way it's headed.

MR. BUCHANAN: Okay. Well, I don't think anything we have put in here is going to stop that process.

Okay, I guess -- are there any other features that have been left out? We've beat up all the ones here. Are there any other features someone can think if that's been left out?

(No response.)

MR. BUCHANAN: Do we have a tentative over there? Forget it? Okay.

Then I think what we could do on the rest of the document is -- paragraph one basically -- there is an APCO, this is going back through the TIA/APCO Project 25, 34 process. There is a Statement of Requirements there that brings out a whole bunch of it, but it's to wideband data even wider than what we're talking about, up to T-1 speeds and higher. We can leave that in or take it out. I really don't care. I left it in there because that seemed to be a good reference document that TIA could go back to, keeping in mind these requirements specific for this band.

Is there any problem with that?

MR. LELAND: Leave it in.

MR. BUCHANAN: Leave it in. Okay, that was Wayne Leland said, "Leave it in."

Okay, paragraph two is stating that -- we're recommending that all equipment, all wideband equipment have the interoperability standard in it. That's the same as what we did in voice and narrow band data.

Does anyone have a problem with that?

Go ahead.

MR. SCHLIEMAN: Do we need to require that of equipment which is in a fixed operational application, never being subject to interoperability?

MR. BUCHANAN: What would be the application?

MR. SCHLIEMAN: Well, like Art McDole's water gauges, for instance, you know, where he's got radio monitors that are out there checking flow rates or water levels.

MR. BUCHANAN: Number one --

MR. SCHLIEMAN: They are physically bolted in place. They talk to a central station.

MR. BUCHANAN: I don't think that's going to get on the air on this application. I think that this --

MR. SCHLIEMAN: Why is that?

MR. WELLS: I think that water gauge is general use channels anyway, not interoperable, so this wouldn't apply as a requirement.

MR. BUCHANAN: Well, this is saying that if you --

MR. SCHLIEMAN: Well, that's my point. That we're talking about whether it should be in every radio made that can do --

MR. WILHELM: I'm not sure you can use this band for fixed applications.

MR. SCHLIEMAN: Is that right?

MR. BUCHANAN: Yeah, I think it's mobile applications only.

MR. WILHELM: I think it's secondary to a main system. You can't have an alarm system at your transmitter site?

MR. DEMELLO: -- like your concept there on mobiles, mobile applications. If it's not a mobile application, it doesn't need it which, in essence, is what Bob is saying. I agree with him again today. It's a scary day.

MR. NASH: Oh, oh, yeah that is. Mobile and portable.

MR. SCHLIEMAN: Yeah, same thing. Same thing.

MR. BUCHANAN: This day is going to go down for the day of agreement or something.

MR. NASH: Something in infamy, I think is the term.

MR. BUCHANAN: Okay. So what you want to change it to is "all mobile equipment designed to operate on the wideband data is capable," would that fix it?

Does that make everyone more comfortable?

MR. SCHLIEMAN: What will the mobile equipment communicate with?

MR. BUCHANAN: With other mobile equipment. Other mobile equipment and with the fixed infrastructure back to wherever over the internet because we're asking for IP protocol.

MR. SCHLIEMAN: Yes.

MR. BUCHANAN: But while he's doing that -- since he asked the question and then went onto -- I think this comes under -- paragraph three, I think, in light of what we are doing here can come out. Is that fair enough?

I mean, it was background material that apparently is extraneous to what we need to give TIA.

MR. MCDOLE: If I might offer, it's not truly extraneous. Those are the actual requirements of the FCC and should be referenced. You don't have to go into all the detail on them but they must conform to the FCC R&O regardless, and TIA needs to know that's what they are working against under any circumstances.

MR. BUCHANAN: Okay, just leave it in there as a background?

MR. MCDOLE: Well, you can either leave it all or just reference it. You know, it must conform to the efficiency standards as prescribed by the FCC.

MR. BUCHANAN: Well, it's easier --

MR. MCDOLE: But don't take it out because they have to work against it.

MR. BUCHANAN: Okay. It's easier -- the other thing it does point that wasn't clear to me is there is an efficiency standard for --

MR. MCDOLE: Fifty and 100?

MR. BUCHANAN: There doesn't seem to be one.

MR. MCDOLE: No, it's however you like to read it the way they wrote it.

MR. BUCHANAN: Yeah.

MR. MCDOLE: Pure math so it can't be too far off.

MR. BUCHANAN: I also, just for general information, Michael, I couldn't find anything in the rules. There is adjacent couple power rules for the 150 kilohertz channels but there is no table for the 50 or 100 kilohertz that I could find, so I don't know if that's going to be an issue later. That was just something that popped out when I was researching all this.

MR. MCDOLE: I think of -- but it's just one reference to the bits per hertz and we've been using all the way along, but it does need it stated for the manufacturers to work against in one form or another.

MR. BUCHANAN: Well, do you just want to leave it like it is or should it be -- does it matter?

Yeah, Steve.

MR. BEEFERMAN: If I recall -- Steve Beeferman, Data Radio.

If I recall correctly for the wideband portion of the report and order, there is no requirement for interoperabilities, so wouldn't there have to be a rule changed to accommodate that?

MR. BUCHANAN: Yes.

MR. BEEFERMAN: Okay. The other comment was would not this process be useful in the narrow band portion as well?

MR. BUCHANAN: Well, we've already went over and did the narrow band.

MR. BEEFERMAN: Well, I guess the question is what has been developed, is it really shown to meet the user needs in terms of interoperability?

MR. SCHLIEMAN: You're talking about your waiver, right?

MR. BEEFERMAN: Not necessarily. The fact is we're trying to get something that's uniform, that reflects what the users need, waiver aside.

MR. BUCHANAN: Well, I think we had basically the same thing for the narrow band, and we beat up the applications and whatever. We had a standard that we could look at and that we adopted there which we don't have here.

MR. BEEFERMAN: It seems to me if a group is going to get together and work out the best way to provide a standard to define needs, that they might as well look at wideband especially, and narrow band, particularly if there is some interchangeability and that provides for efficiency of design, performance or what have you.

MR. BUCHANAN: Well, I'm not sure I'm prepared to open up to totally change what's already been adopted.

MR. LELAND: Wayne Leland. Can I comment on that from the TIA's standpoint?

MR. BUCHANAN: Sure.

MR. LELAND: The narrow band data standard was developed over a period of several years against a user defined statement of requirements, Project 34, on narrow band data. Narrow band data is a lot more well known because it's been around for 20 years or so, at least many applications, as opposed to the wideband data which is now coming in.

So I think there is a difference, and to answer Steve's question, yes, it was put against a -- through a TIA/ANSI approved process, and it was based upon a user defined statement of requirements that the Project 34 part had put together.

MR. BUCHANAN: Yeah. I'm just not prepared today as acting chairman to open up the narrow band again where the decisions have been made and we had a thorough discussion before at a couple of different meetings.

MR. BEEFERMAN: I don't exactly know how many years ago that was, but you want to run Windows on a 283. Think about that. That's the essence of what my comment was about.

I do respect the fact that the standard was developed against user needs, but you know, I know and everybody in this room thoroughly understanding the rate of change that's occurred out there in the marketplace. The user's perception and needs have changed substantially, and to ignore that, I think, would be a mistake.

MR. BUCHANAN: Yeah, go ahead.

MR. MCEWEN: I respect what you are saying and I hear you loud and clear. But you know, you have to kind of understand the difference.

First of all, the wideband applications that we are now thinking about for the future and the way it's going are going to be quite different than -- I mean, we're talking about a lot different kind of applications for narrow band data, and I don't think that the standards that were developed are too far out of synch even yet today.

So you know, I support the fact that I don't think we do that. I respect the gentleman saying it's worthy of looking at, but on the other hand I think there is a vast difference between the two.

We might take some lessons from the narrow band work as we refine this wideband stuff, but I don't think we want to go back and start picking that apart right now. We've got too much to do in this area.

MR. BUCHANAN: Yeah, and certainly not today. I think we need to keep focused on this document for this application, wideband.

Okay, based on what we are doing, I think four clearly needs to come out because we have come up with a different approach for handling that. We're going to throw it back on TIA to define how to use the multiple bandwidths at this point. And five is the same way.

Six, I don't know. I could go either way on that, take it out or leave it in. I think there is -- it does discuss some of the trade-offs that are pretty obvious there to you. If it doesn't limit -- if it's not putting a limit on TIA just discussing that, I think it brings out some important points and I would leave it in. If it's going to limit something, I'd take it out.

Okay, I don't hear anything. We'll leave it in for now unless someone jumps up.

How about seven? I think that's just kind of a general statement, but look it over.

(Pause.)

MR. BUCHANAN: Go ahead, Glen.

MR. NASH: Dave, Glen Nash.

In seven, you refer to infrastructure and then talk about direct unit to unit. That really is an infrastructure. It would be more appropriate, you know, maybe talk

about modes of operation as being, you know, fixed network, temporary repeaters, direct unit to unit, but --

MR. BUCHANAN: Oh, change "infrastructure" to "mode of operation"?

MR. NASH: Yeah, it might be more appropriate.

MR. BUCHANAN: Okay.

MR. NASH: Because, again, direct unit to unit is infrastructure.

MR. BUCHANAN: That's true. You have a point. Okay, I'll make that change to it, and basically leave that one in.

MR. WELLS: Well, you defined the three types with either fixed, temporary, or localized. If you put that phase in parentheses, then it's -- it's infrastructure that can be three times or direct unit to unit. I think that's what you were trying to say.

MR. BUCHANAN: Well, or mode of operation, either way. I think probably mode of operation is a little bitter.

Eight should come out. That's putting a restriction on that we've decided not to; is that correct?

MR. SCHLIEMAN: Yeah.

MR. BUCHANAN: Okay. Eight is coming out.

Nine, 10, 11 and 12 are just examples. Twelve, well, 12 doesn't -- it doesn't limit anything. It just does point out what your actual -- your speed of services is going to be given some different file sizes. So probably for background it doesn't hurt anything.

Okay, given what we have done here, is there a consensus with these changes we have outlined to go with the document as changed? Everybody getting

happier with it. I'd like to hear from both manufacturers and users if we have gotten there now.

(No response.)

MR. BUCHANAN: Okay. Okay, it sounds like -- does anyone want to jump up still and object to anything? Have we reached consensus on this document for wideband?

MR. WELLS: One last item, Dave.

MR. BUCHANAN: Yeah.

MR. WELLS: We talked about asymmetrical communications, say 50 kilohertz up, 150 kilohertz back. Can be that drawn out of here for TIA to use as an option?

MR. SCHLIEMAN: I wrote that down in my notes here.

MR. BUCHANAN: Okay, I don't have that in mind.

MR. SCHLIEMAN: I put, "A variable bandwidth automatically adjusting to conditions if the cost penalty for it is not too significant is one reasonable requirement. A slow speed back channel can be used to provide bandwidth control in the forward channel."

MR. BUCHANAN: Do we want to put that as an 19 then?

MR. SCHLIEMAN: Yeah, I was basically trying to rewrite the summary of key features.

MR. BUCHANAN: Yeah, go ahead, Glen.

MR. NASH: David, this is Glen Nash.

And just to comment. Based on many years experience with the Project 25 process, the user needs document is a living document. It does need, you know, get updated and modified over time as new issues come up through the -- you know, partly through the TIA process and new questions come up in the technical design process as to, well, what do we do about, you know, X or Y.

So, you know, I think this is a very good start, a place to, you know, to go ahead and approve, but I would caution you, you know, that we don't about this as being the final document, end all to meet all.

MR. BUCHANAN: No, I agree with you. You are totally correct, and I think that will come out when the TIA group comes back to us and tells us how crazy we are or what the constraints are, we may want to do some other trade-offs.

Well, I guess the only last issue then is whether there should be a 19 that had -- I don't even remember what it was having in there. Tell me again. I got lost. And whether that's too constricting for Wayne and the group.

MR. LELAND: No, I -- his comment was fine. I think he is rewriting one of the other ones because he struck some -- I would suggest that we let Bob do that and --

MR. SCHLIEMAN: I was just trying to put these together --

MR. LELAND: Right.

MR. SCHLIEMAN: -- in kind of a set of specifications to forward to TIA, and I haven't had a chance to --

MR. LELAND: Wayne Leland again.

My request was going to be -- I think it was pointed out that we have our next round of TIA meetings starting a week from Monday, and it would nice to have this document from NCC to be able to hand and say, okay, guys, now we've got at least something on it. Let's go start working on it.

MR. BUCHANAN: Yeah, that's what I really would like to do too.

MR. LELAND: So whatever the process being to give Bob the power to do that and e-mail it out to this group, whatever, however, so we can get it approved by NCC tomorrow.

MR. BUCHANAN: Yeah.

MR. LELAND: And then into TIA would help a lot.

MR. SCHLIEMAN: Suppose we try to massage this this evening?

MR. BUCHANAN: Yeah, I think Bob and I can --

MR. SCHLIEMAN: And submit tomorrow.

MR. BUCHANAN: We know what we're going to keep and we know the key features, and if that last one isn't a problem, then I think we have the consensus and then we can just write up a -- in fact, what we could do tomorrow if we could get just a little bit of time at the implementation meeting is just hand it out --

MR. EIERMAN: I think implementation is probably going to have little time tomorrow.

MR. BUCHANAN: Could we get just a few minutes to hand it out and make sure we haven't made a boo-boo.

MR. SCHLIEMAN: Why don't we just do it at the end of the meeting. You know, let them get their thing over with and by then they will have had copies made --

MR. BUCHANAN: Right.

MR. SCHLIEMAN: -- because there is time to get copies made.

MR. BUCHANAN: Yeah. Okay.

MR. SCHLIEMAN: And everybody can look at it.

MR. BUCHANAN: We'll do it that way. We will rewrite this, make sure everybody has a chance to see it tomorrow, and then get any last minute changes in the report. I'll present it to the NCC and we'll have to try to ask the steering committee tomorrow for the steering committee people that are here to approve it so that we can send it on to that meeting and keep the process going.

Does that sound good to everyone?

(No response.)

MR. BUCHANAN: Okay.

MR. SCHLIEMAN: John was trying to send me that document that he called me to tell me it was in route, and I hadn't received it yet.

MR. BUCHANAN: Okay.

MR. SCHLIEMAN: I don't know what his problem is.

MR. BUCHANAN: Well, then actually I was supposed to a long time ago get a 10-minute break, but why don't we adjourn the meeting, take the break, and start up technology again with Glen. Does that work?

Yes, sir? You are holding everyone up from their breaks.

MR. EIERMAN: I'm probably going to have to give you time tomorrow now.

Ted Dempsey asked me to tell you that there is some copies of the draft national plan and guidelines for the draft national plan now laying over there on the table, closest corner to the door. So yeah, I'll probably have to give you some time tomorrow now.

MR. BUCHANAN: Okay. We are hereby adjourned and we will start up in ten minuets with technology.

(Whereupon, a recess was taken.)

MR. BUCHANAN: I think we're going to go over the other document that's back -- that I handed out this morning, technology issues, and basically real quick change the recommendations to match what we have done in the user needs.

Based on the user needs, I think we just asked -- I think number one we should change and say -- we will ask TIA to come back with the trade-offs between staying at the current 150 kilohertz bandwidth or whether the bandwidth should be changed and put it back on TIA to give us some data on that.

I think number two is just simply -- rather than saying a specific data rate with the best possible error corrected data rate on the end, and take off 192 kilobit. I think that's consistent with what we came up with.

Three either needs to be taken completely out or changed just to ask again for the trade-offs of portable operations, or the limitations.

And I think four is important. There doesn't seem to be much in the way of data or literature telling us at these bandwidth what we are going to deal with as far as ground speed for mobiles.

I think maybe it's best if we just take three totally out of there. It's addressed in the -- we ask for it in the user requirements document and it's redundant here, and I'll change any text above to reflect that.

I don't want to rush this through, but I also do want to rush it through as it's getting late. If someone has some real problems with anything in here, then we'll delay it. If not, then we'll just make the changes and get on with life. I don't think it in any way will restrict anything. It does ask for -- you know, for some recommendations from TIA to help us better here figure things out.

Any comments from anybody? Does that sound good?

(No response.)

MR. BUCHANAN: Great. Silence. It just be consensus then. It's either that or else it's getting real late and everybody wants to go.

Okay, then I will consider it as consensus, and we will make the changes, we'll try to have a copy tomorrow for you to look at and then Glen can include this in his report to the NCC. I don't think this one is quite as critical as the other one that we did.

With that, it's all yours, Glen.

MR. NASH: Okay, the last time of business here was this morning's discussion relative to software defined radios, and a statement to be forwarded by this committee to the NCC for possible forwarding to the FCC.

I have prepared a, if you will, strawman of that statement and we're open for discussion on forwarding this statement or modifying it to forward it. I'm open for comment.

MR. WILHELM: Glen, your strawman got loose, and got circulated to some of the Commission staff who viewed it as a final document. So in the future if we are generating draft documents like this --

MR. NASH: It should just say draft.

MR. WILHELM: -- indicate draft and the author.

MR. NASH: Understood.

MR. SCHLIEMAN: That gets us expedited treatment then, right?

MR. WILHELM: Gets the fourth floor in a turmoil.

(Laughter.)

MR. NASH: Any other comments?

MR. BUCHANAN: Just one general comment.

I think it's a nice piece of work, I believe, and I think that the word "technician" is too narrow a word and maybe the word "party" might be more appropriate. It kind of ties it down to a too narrow a situation perhaps. I mean, ultimately it's -- you know, because it goes through several levels of review, filtering and whatever, but who is say a technician will necessary enter this software.

MR. SCHLIEMAN: How about "individual"?

MR. BUCHANAN: What's that?

MR. SCHLIEMAN: Individuals, or something to that effect?

MR. NASH: To licensed individuals?

MR. SCHLIEMAN: Well, unfortunately, they don't license technicians or anybody that works in land/mobile anymore. Only maritime services and aeronautical.

MR. NASH: I think this is broadly enough worded though that, you know, the licensing does not necessarily have to be a Commission license, but that there be some formal process for approving individuals, whether that's a process that is controlled by the manufacturers, by the Commission, by some other body, you know, that there be some consideration of how do we limit the ability to program the radios to responsible individuals and hold those individuals responsible.

MR. SCHLIEMAN: I think then if you want to say that, you need to say that. Enter it into the SDR radio by a responsible individual who shall be held accountable.

MR. NASH: Okay, so it would rather be --

MR. SCHLIEMAN: I don't think you get the Commission to backtrack on starting to license technicians again just because of this.

(Pause.)

MR. NASH: We say down in three that they should be held responsible or be held accountable.

All right, David?

MR. EIERMAN: Yeah, David Eierman, Motorola.

One of the issues with software defined radios is they are probably going to be operated on multiple bands and multiple different services, so I'm not so sure what you don't want it to say is that, you know, when operating or implemented on different services and different bands they need to utilize the rules for those bands and services,

i.e., Part 90 has 9427, which makes it a licensee's responsibility for proper operation of the radio on Part 90 frequencies, and it's, you know, his responsibility to make sure it's programmed correctly, and operating correctly.

Also in Part 90 is the programming requirements around 9200 and something, about, you know, what a user can program and what a technician or, you know, non-user can program into a radio.

Part 80, you know, is maritime frequencies, that they are a software defined radio. You actually got to have a licensed maritime technician to do anything to that radio. Ed's the only one left from NTIA, but I mean, NTIA, I don't know what the rules are for -- if NTIA frequencies are put into the radio.

So you know, the software defined radios are going to operate on multiple services. I think what you need to put in here is that they've got to, you know, follow the rules that are in place for those services already.

MR. NASH: Dave, I don't disagree, you know, at the moment Part 90 puts the responsibility on the licensee. I will tell you that in practice in the field what is happening is people are being -- are getting radios programmed who are not licensees and are operating by technicians, you know, who have no responsibility for ensuring that that radio is only being used in a proper manner, you know. So there is no licensee to hang the hat on.

MR. EIERMAN: Yeah, our problem is not --

MR. NASH: To make a licensee responsible for -- that a radio is only used in an appropriate manner, you have to have a licensee to go back to. And if somebody is operating unlicensed, there is nobody to hang the hat on.

MR. EIERMAN: Well, that's a different enforcement issue. I mean, that's here.

MR. NASH: But that's the problem that we are facing in public safety these days, is unlicensed operation, and it's an unlicensed operation because an unscrupulous technician sells a guy a radio and puts it on any frequency and sends him off. And as long as nobody complains, he's okay.

MR. ENSMINGER: Bob Ensminger, State of California.

I see some problems here. In the way the State of California has these user agreements with counties and the cities and to operate on their frequencies, and we program those radios on those frequencies. We could have a situation that a technician could refuse to program a radio without that written document in front of him for that frequency that he's asked to be programmed into that radio.

This operationally, as far as -- I mean, all our techs are licensed. But it could be a big problem with us and a union situation as well.

MR. SCHLIEMAN: Is that operationally a bad thing to have an order to program a radio? A work order or some authorization by authority?

MR. ENSMINGER: No, we do -- we do that. We do that. But generally there is some leeway given to the technicians right now when they program a radio and they are asked by somebody in the field to put in a certain frequency that may not be one of ours, they don't get the assurance from the person who is asking for that frequency to be programmed that that is really authorized to be in that radio.

MR. SCHLIEMAN: And we have that same problem in New York State.

MR. ENSMINGER: Yes.

MR. SCHLIEMAN: It's called the cup of coffee rule. Here is a cup of coffee. Would you put that frequency in my radio?

MR. ENSMINGER: That's exactly my point. So this, as far as enforcing this situation we could get into a situation, if this came to place, that a technician could refuse to program that radio without written documents authorizing that particular frequency to be put in that radio. I could see that coming.

MR. BUCHANAN: Isn't that what he should be doing?

MR. ENSMINGER: Not necessarily, no.

MR. BUCHANAN: Well, why not? Then how does that tech know that he's being asked to do something legal?

MR. ENSMINGER: By virtue of where they operate in the State of California. Let's say somebody came down from El Touras on a fire truck and he came down to operate in Los Angeles.

MR. BUCHANAN: Well, then all the tech needs is a copy of the fire scope document that covers that.

MR. ENSMINGER: Yeah, but without that document in hand would they do that?

MR. BUCHANAN: They shouldn't.

MR. ENSMINGER: Well, the shouldn't.

MR. BUCHANAN: My techs wouldn't -- would refuse also unless they know for certain. I don't think they should be allowed to do that. I think they should have that written information and know that they are doing something legal before they do it.

MR. ENSMINGER: Well, being as large as the State of California is, and we're not just limited to the County of San --

MR. BUCHANAN: No, I understand that, and I know you've got to respond to the fires and do that type of programming, but shouldn't the tech have that information ahead of time?

MR. ENSMINGER: Well, think of that statewide though, you know, of those requirements or this requirement here being on a statewide basis as far as the State of California, as big as it is, where we can go from Altura to San Diego and that's a long ways, many, many counties.

MR. NASH: Yeah, but I -- the wording here, you know, is "appropriate authority" so --

MR. ENSMINGER: I can just imagine some technicians refusing to program a radio and that could get us in an operational requirements later on.

MR. MCDOLE: I hear what he was saying and, Bob, I hear want you are saying about the cup of coffee rule, and I stressed this to my son on getting something verbal from his commanding officer and word of mouth or the verbal agreement only lasts as long as the guy is alive or employed by the agency. So once that person is gone where is your documentation or where is your -- I'm going to use the word "authentication" that putting that frequency in was valid at the time you did it.

When it comes down to requiring a piece of paper before that technician will put it in, if you don't have that fire scope or if you don't have a copy of the license or a sharing agreement signed, can the technician have a piece of paper that is like a blanket authorization that says you are authorizing me to put this frequency in this radio, and you

sign right here. Now that technician has a piece of paper from that guy that might die tomorrow or not be employed tomorrow, but at least he's got a piece of paper signed and dated authenticating the authorization to put that frequency in the radio.

But somewhere, somehow a piece of paper ought to be there. Myself, if I was a licensed technician doing that work, I would like to have documentation to back me up.

MR. NASH: I'm not sure of the wording but I agree with the concept, the reference to anybody programming radios without written authorization of one form or another is bad. I agree with Dave. In the County of Monterey, I had multiple agencies, technicians, and everyone had to have a written authorization before they programmed in any frequency because we had lots of requests to put frequencies in which were not properly authorized by the FCC. The FCC requires a letter of agreement if they are going to operate under your license.

And so I suspect -- I wouldn't want to be a party to an unauthorized operation. We're not asking for anything in that regard.

Glen's remark about the problems we are having is probably understated. Dave had mentioned the maritime requires a maritime license. We have a lot of fishing boats operating on police frequencies and we have to have the FCC track down quite often. They love it and they are good frequencies there for the fishing boats because the other fishermen don't know what channel they are on. And this type of thing, we just see in the software defined radio as exacerbating this problem by allowing crossing into multiple bands and crossing multiple techniques, and it does need some controls; not to prohibit anybody from authorized from doing anything, and I have no problem with

changing the wording to whatever you want, people, technicians or whatever is appropriate.

Many of us many years ago had licensed issued by the FCC before they could work on a radio, and those technicians at that time were very careful about following the FCC rules and regulations because they knew they placed their license in jeopardy if they did something wrong. The FCC saw fit to get rid of that program and I doubt if they will want to institute another one.

I'm not necessarily suggesting that the FCC has to develop another licensing program, but there should be some way of authorizing, as they do now. If you can't place the responsibility back on the licensee, that's like asking the criminal to register their guns, you know. It's not going to happen. So we've got to stop the unauthorized people from putting in authorized frequencies and equipment.

And what's the best way, I don't know. This is simply a story.

MR. OVERBY; Stu Overby, Motorola.

A couple suggestions. I think you have several levels of control. Most of this is focused on the technician. What you might consider is something that says users of an SDR, software defined radio, must have a license or other written authority if any frequencies on which the SDR transmits, because you have sharing agreements now, I think, between different jurisdictions to use frequencies in certain instances. That's not a license but that's authorized.

MR. SCHLIEMAN: Yeah, 90.421.

MR. OVERBY: Yeah. And the second thing would be what Dave was talking about, which I believe is a separate issue, is that operation of the SDR must be consistent with the rules applicable to the frequency of operation.

Okay, so one is the authority for the frequencies you are operating on. The other is consistency where the technical rules that are in place for a given frequency.

And I guess the third one is the issue of type approval, type acceptance. Certification, I believe, is what the Commission calls it now. That one is a little bit tougher, but something of the effect of an SDR would need to be, you know, type accepted for the range or frequencies, and emissions, et cetera, on which you would operate. That one is harder because you may not know all of that in advance, but that one has to be dealt with.

And then, I guess, if you went to add to that something on the technician side, it seems to me that's maybe another level.

MR. BUCHANAN: Well, Glen, maybe you could go that approach instead of trying to hang it onto the technician in the thing, just hang it onto the actual user, whoever that may be. It wouldn't necessarily be a licensed user, but there has to be clear penalties for operating on the frequencies when you are not authorized.

MR. SCHLIEMAN: And I think when we talk about frequencies, we need to talk about emissions also because you can have an authorization to operate a 16F-3 emission and you could have an authorization to operate something quite different with an SDR.

And I guess, when you talk about licensing an SDR or certifying an SDR, you are really talking about a little piece of plastic here that you're going to program it with cause that's where all the information in the SDR is coming from, most likely.

THE AUDIENCE: Type acceptance is part of --

MR. SCHLIEMAN: Yeah, because it's not just hardware anymore. It's really what you plug into it software-wise.

MR. NASH: Okay. So we're adding two new requirements. One, users of an SDR must have a valid license to operate on a specific frequency or appropriate authorization from a licensee.

MR. SCHLIEMAN: Can we say frequency and emission or an appropriate, you know, combination?

MR. NASH: Frequency and emission type?

MR. SCHLIEMAN: Yeah, frequency and emission. Have a license covering both of the attributes.

MR. NASH: Okay, so frequency and emission type or appropriate authorization from --

THE AUDIENCE: Appropriate written authorization.

MR. SCHLIEMAN: Yeah, written authorization.

THE AUDIENCE: Must have a license or an appropriate written authorization from the licensee.

MR. SCHLIEMAN: I might add that when we offer -- 90.421 authorizations to other agencies we include a copy of our license, our mobile license covering their operations, and we also include a copy of our operating protocols.

Many times I see letters of authorization from other agencies that just say, yeah, you can use our channel, it's okay. And, you know, they might have a 30-watt authorization and we're running high watt mobiles. Is that legitimate? I don't think so.

So you know, there is a lot more to this that the user typically understands, appreciates or for that matter cares about.

MR. NASH: Okay, I'm just a little concerned. You know, written authorization implies preplanning of the need, and you know, there are emerging situations where, you know, at the scene of the event, you know, major fire, you know, we're programming radios on the spot. You know, to do the paper work at best will follow the event.

MR. SCHLIEMAN: You don't plan on programming SDRs on the spot, do you? You're going to know in advance what the software --

MR. NASH: We do it today.

MR. SCHLIEMAN: On what?

MR. NASH: For major forest fires.

MR. SCHLIEMAN: Yeah, using a standard physical radio, right?

MR. NASH: Depending upon what radio shows up. We program it for the frequencies that are needed for the event.

MR. SCHLIEMAN: Yeah. With the program for the radio, right?

MR. NASH: Again, you know --

MR. SCHLIEMAN: Or are you using crystals?

MR. BUCHANAN: But Glen, you don't --

MR. NASH: But again, you don't necessary have the written agreement between XYZ volunteer fire department and the state agency. You know, that's my concern. You know, a written agreement is between two individuals, and you are not necessarily going to have a specific written agreement between those two individuals in an emerging event.

MR. SCHLIEMAN: This was dealt with in interoperability in the document on -- remember that one? The one on authorizations, Carlton?

MR. WELLS: Yes, that's what I was going to bring up. Carlton Wells, State of Florida. I forgot to identify myself earlier.

I was going to mention the sharing agreement that's included as one of the attachments to one of the documents already in the February 25th report.

Take that further into an incident where there is a disaster, if you are implementing the ICS can you incident commander be the authorized signer to say, yes, use frequency X, Y and Z under this authorization and go program those radios with your SDR software. And would that commander or would somebody have a binder that has all the frequencies authorized for a certain incident and what the limitation of those are?

Let's add to the software package that the capability to put a limited time frame. Say for an incident you expect it to last five days, let that time out in five days so that that frequency goes away after that. Complicate it a little bit.

MR. SCHLIEMAN: Yeah, it is a problem.

MR. NASH: yea, I'm just concerned, you know, from my experience with some of these events the paper work follows the event. What you get is the verbal

instruction go do it, and we'll deal with the paper work later because we're dealing with the incident, not with the technicalities.

MR. WELLS: And what we talked about also in the interoperability subcommittee is when someone is requested to come in under a mutual aid agreement to operate in that area under that area's license, it's a verbal. That when they are told to come in and operate in my area and on my frequencies, that's a verbal agreement that you can come in and go to that channel.

Be it the interoperability channels in this case, those interoperability channels are in your radio by virtue of your licensed area. But once you leave your licensed area and go to some other location, you're not licensed for that, but the other agency is under their call sign. They are requesting your assistance. So under a verbal agreement, a mutual aid agreement, you are able to come up on their frequencies and license under their call sign even though they are your frequencies under your call sign in another event.

In a software definable radio, it's not the interoperability channels as much as it's any channel you throw in there. And so where is that verbal coming to my area and operate under my call sign under a verbal. How do you document that before the technician can program the radio?

Again, I would go back to try and ferret out that written agreement before I program that radio or at least chase it down during a disaster to follow the event, but something to act as a CYA for maintaining my license or my employment.

MR. BUCHANAN: Well, Glen, you could probably fix it just by either taking out "written" or adding something that's in an emergency a verbal authorization is acceptable.

MR. NASH: Yeah, I think just appropriate authorization and leave it at that.

MR. BUCHANAN: Appropriate authorization.

MR. NASH: And not -- you know, change it if somebody had recognized that it be appropriate written authorization, that's what I was objecting to. You know, there is many situations where the written documentation at best is going to follow the event.

MR. BUCHANAN: Yeah.

MR. NASH: If it happens at all.

MR. BUCHANAN: As long as it's appropriate. Obviously, that's -- with anything you can end up with figuring out whether it was appropriate or not. Even if it was written, it may not be appropriate.

MR. NASH: Okay, and then "Use of an SDR shall be in accordance with the appropriate FCC rules related to the frequency of operation" was the last thing that was asked to be added.

David? Or Carlton?

MR. WELLS: We'll keep you straight.

MR. NASH: Well he was there and then you stuck his --

MR. EIERMAN: Well, I think he's going to say what I was going to say.

MR. NASH: Okay.

MR. WELLS: That's right.

Well, I'll let you finish up with that, but there has got to be some housecleaning too after the disaster. Once you program those radios you've got to then take the programming back out when those folks go back to their home station. Leaving those frequencies in just adds to the unlicensed operation to come about later on, and Dave is going to bring something out.

MR. EIERMAN: Yeah, David Eierman, Motorola.

I mean, I think you guys are getting a little too much into the details.

MR. NASH: Mm-hmm.

MR. EIERMAN: I mean, you know, going back to -- you know, if you look at 9407, 4909, 417, 419, I mean, in a declared emergency imminent life/property, you are liable to throw out some of the rules and do what you are saying and not get a written authorization. So I think you guys are getting a little too far into the details.

You know, back to my original point. You know, the rules for different services tell you how the equipment has got to be typed accepted. I mean, you go to Part 215 if you want to, you know; how the vendor has got to build the equipment, what it's allowed to emit, how you've got to prevent users from accessing certain things, and how the licensee can operate it. So I mean, you need to tie it back to the fact that the software defined radio is going to operate on Part X. It's got to abide by Part X rules, and it's going to -- it's got Part Y, it's got to abide by Part Y rules, and you know, you may have to build a lot of those common denominator radio. If it meets the worst case rules, I don't know.

MR. NASH: Well, now you're getting into an SDR that becomes very interesting, you know, is that today radios are type accepted for use in a specific part.

MR. EIERMAN: Well, you know, we build --

MR. NASH: To ultimate definition --

MR. EIERMAN: -- a lot of radios that do Part 80 and Part 90. So I mean, we do radios that do multiple parts.

MR. NASH: Understood. But to its ultimate definition an SDR is going to be programmable to just about anything. So how do you as a manufacturer submit it for type acceptance except to get it type accepted under every part for every possible use that that radio could possibly be programmed for, you know.

THE AUDIENCE: -- under SDR.

MR. NASH: That's right. I think that's what you are faced with, you know, is SDRs are going to present some very unique problems to the whole process here. So you know, we're trying to focus on -- you know, the concerns that were raised this morning, you know, and trying to get those, you know, into a statement because, quite frankly, you know, it either goes out today or we missed the window for making a statement, so we're trying to get this thing down to the statement that this group wants to make.

MR. ITTNER: Al Ittner from Motorola.

We had a discussion and I think, you know, Bob did a good point of reading out some of the concerns that we had with an SDR in our response to the NOI also. And I'm mainly concerned with the last sentence in the second paragraph that says, "A software defined radio may allow same agencies to provide full interoperability using

only one radio and thereby simplifying operation for the field officer and potentially reducing the overall cost. Purchasing one radio even if slightly more expensive is cheaper than purchasing several different radios."

The problem that I have, I guess, with that is that it creates an impression and creates an implication to the FCC that they may read more into this. It implies that every police officer out there is going to have a portable when what we are really talking about wit SDRs at this point is a gateway, whether it's in a fixed or in a mobile type of emergency situation at this point.

We are really a long way off in terms of cost, size, power consumptions to bring these down to a true mobile that fits into a police car or eventually even into a portable level.

And so I think the implication here is that, you know, you've got an SDR which replaces the radios that are hanging on police officers today.

And finally, I think that it does -- I'm sorry. I thought he was talking to me. The issue is that it does not replace the need for standards. There is no mention in here that an SDR does not replace the need for a standard, that standards are still needed. I think the FCC might see this and say what's this argument about the need for a standard in 700 band. You know, you've got something here that's going to talk across all these bands. What's the issue?

There are three points that we make that relate to exactly what I was saying, and I guess I would recommend that we include this somehow into the statement that you are making.

MR. NASH: Let me hold here.

MR. ITTNER: Mm-hmm.

MR. NASH: This statement was relative to things that were brought up this morning. We are not in a position to sit here and try to draft a response to the entire NOI. You know, I would like to -- you know, let's get down, you know, specific changes that need to be made to this, you know, and let's try to stay focused. We are already past the time to be leaving here.

MR. SCHLIEMAN: I think the issue is that while an SDR has positive attributes for public safety, it has some issues that are of a definite concern in terms of protecting public safety operations from improper, illegal, unintended operations, unauthorized operations. And I think those are the only things that we are trying to address in here right at the moment.

MR. BUCHANAN: Glen, why don't we change it in a couple of ways to get our main point across.

MR. NASH: Okay.

MR. BUCHANAN: Why don't we say just what Bob just said and get rid of all the rest of that. Let's just say that we're -- that we recommend the FCC formulate rules that prevent unauthorized users from operating on public safety frequencies, and we can't write those rules. We can't even figure them out in this time frame.

And if that one sentence causes a problem in that paragraph, take it out also because it's really not needed to get that point across.

MR. WELLS: I think I would agree with you, Glen. I mean that's -- or Dave, I'm sorry. That's the issue that we have with the implications that a sentence like that might cause.

MR. NASH: Okay.

MR. SPEIDEL: Bob Speidel with Ericsson.

I've got some wording here that may be -- I hope is going to address what you were just saying, Dave. I understand very clearly what your concerns are. The recommendation that I have or the suggestions I have would be in the -- I believe it's the third paragraph down, the third line which begins, "The extent to which an end user..." I would change the "end user" to "to the extent to which an individual," and then put after that "licensed or unlicensed, may be able to program a radio to operate on any frequency in any mode increases the ability of that individual to program the radio to operate in an unauthorized manner."

Then in the next paragraph down where you said, "to help alleviate these concerns," the first line is fine but I would change the second line to read, "The Commission include provisions to enhance enforcement of all rules against unauthorized use." I would take out the four separate bullets because I think, as Dave said, that might be getting a little too specific, and actually you may be limiting yourself. And I would just replace it basically saying, "One item may be to implement rules that will limit programming of SDR to appropriate individuals who will be held responsible for unauthorized use of any SDR that they have programmed."

Because the thing is even with all these rules going in, it's not really going to address the situation where somebody is unlicensed, unauthorized, whatever, and just goes out and does it. It's not -- you know, really you are relying on the enforcement rules, and I think as part of the NOI one of the things the Commission was looking for

was to identify areas where we have concerns that they have to be particularly concerned about for including rules, as necessary.

MR. SCHLIEMAN: Could I have a copy of your notes to type that out?

MR. SPEIDEL: You sure can.

MR. SCHLIEMAN: I can't type as fast as you talk. Thanks.

MR. NASH: Okay, any other comments?

(No response.)

MR. NASH: All right, I'll work on our redraft of this tonight and have copies out tomorrow morning appropriately marked "Draft" and "Version 2 Draft" and we'll go from there.

Any other comments for the good of the order?

(No response.)

MR. NASH: Then I will adjourn the meeting and we're back here at 8:30 tomorrow morning --

MR. SCHLIEMAN: Do you want to recess the meeting if we're going to bring it up tomorrow.

MR. NASH: Well, we don't have a time to bring it up so.

(Whereupon, at 5:11 p.m., the meeting in the above-entitled matter, was recessed, to resume at 8:30 a.m., on Friday, June 2, 2000.)

//

//

//

//

1 //

2 //

3 //

4 //

5 //

6 //

7 //

8 //

9 //

10 //

11 //

12 //

13 //

14 //

REPORTER'S CERTIFICATE

FCC DOCKET NO.: N/A

CASE TITLE: Public Safety National Coordination

HEARING DATE: June 1, 2000

LOCATION: Washington, DC

I hereby certify that the proceedings and evidence are contained fully and accurately on the tapes and notes reported by me at the hearing in the above case before the Federal Communications Commission.

Date: _6-1-00___ _____

Beth Roots
Official Reporter
Heritage Reporting Corporation
1220 L Street, N.W., Suite 600
Washington, D.C. 20005-4018

TRANSCRIBER'S CERTIFICATE

I hereby certify that the proceedings and evidence were fully and accurately transcribed from the tapes and notes provided by the above named reporter in the above case before the Federal Communications Commission.

Date: _6-6-00___ _____

Joyce Boe
Official Transcriber
Heritage Reporting Corporation

PROOFREADER'S CERTIFICATE

I hereby certify that the transcript of the proceedings and evidence in the above referenced case that was held before the Federal Communications Commission was proofread on the date specified below.

Date: _6-12-00__ _____

Heritage Reporting Corporation
(202) 628-4888

Lorenzo Jones
Official Proofreader
Heritage Reporting Corporation